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The Architectural Treatment of the New Street.

IT is fortunate, in any case, that the definite consideration of the London County Council's proposals for the architectural treatment of the new street from Holborn to the Strand was further postponed at the last meeting of the County Council, so that there is time left for some further consideration of a scheme which, however well intended, seems at present to be in a very crude state, and requires a great deal more consideration before anything satisfactory can be evolved from it.

We speak of it, for distinction's sake, as the architecture of the new street, but in fact it does not appear that the main length of the proposed street, the straight portion running north and south and terminating in Holborn at its northern end, comes as yet into the scheme for architectural treatment at all. What the County Council seem to be at present mainly concerned about is the treatment of the crescent-shaped streets which are to bifurcate eastward and westward from the southern end of the main avenue, and the blocks facing or nearly adjoining the Strand. As at present proposed to be laid out, there is to be a crescent-shaped façade at the south, which would form an architectural background to St. Mary-le-Strand. Concentric with this, further to the north, are two curved streets branching, as observed, eastward and westward from the end of the long straight avenue; and the block thus formed is to be further divided by two smaller straight streets running north-west and north-east from the two extremities of the crescent, and connecting with the curved road concentric with it, thus cutting off a large triangular block at each extremity of the whole site.

It is evident that this arrangement of streets leaves islands of rather irregular and awkward shape for building on, and moreover that it gives only too much opportunity for indulging in that passion for "rounded corners" which has become so prevalent of late in laying-out streets. In a letter which we print in another column, Mr. Leonard Stokes utters a special warning against this danger, and observes that it was opportune that Mr. Hennings's paper on "Street Angles" happened to appear almost simultaneously with the County Council's proposals, therefore conveying a wholesome warning as to the architectural horrors that might be in store for us. However, in regard to this point we have heard enough, informally, to incline us to think that Mr. Stokes's fears are exaggerated; that the County Council, or those who are advising them in the matter, have already recognised the undesirability of proposing this kind of architectural conundrum at the corner of every block; and that attention is being bestowed on modifying the shapes of the building blocks so as to elude this temptation.

There are, however, three main points in regard to which we fear that serious mistakes may be made, and to which we will briefly call attention. We may first say (irrespective of the three points in question) that we do not understand why the architectural treatment of the long line of the main street is so far left out of the question. It is surely as important as the rest of the problem. However, to waive that for the moment, the first of our three points is this: the County Council do not seem to be aware what a large and unreasonable demand they are making on architects in their proposals. They ask for (1) an outline elevation, 16 ft. to the inch, of the Strand frontage, the curved street concentric with it, and one of the end triangular blocks; (2) elevations to a scale of 8 ft. to an inch of considerable portions of all these streets; (3) sections to a scale of 8 ft. to an inch through all the front walls; (4) details to a scale of 4 ft. to an inch of special features. All this is to be done in six weeks' time, and no guarantee is given that any of the architects will be employed in carrying out buildings to their own design. It may be safely said that no architects of high standing will undertake that work, under those conditions, for such a sum as 150*l.* Moreover, the County Council have since added the following additional condition—that "architects in preparing their designs shall have regard to the possibility of the central portion of the site lying between the new crescent road and the Strand being used for the erection of a public building." It is impossible to understand what is implied by this condition, unless it is that the selected architects, besides making all these designs for street architecture, are also to throw in, as a graceful addition to their scheme, a design for the exterior of a possible public building. That would be the last straw.

The second point is—what is the precise use which is to be made of these eight designs for street architecture? It is obvious that if eight designs for frontages of streets taken *en masse* are to be made, only one of them can be carried out in its entirety. We have not received any official definition, but what we gather to be the intention seems to be this. The object is not to treat any one of the streets as a uniform design, but to secure a certain harmony of style. With this object, the eight architects are exhorted all to stick to some variety of English Renaissance, so that there will be that amount of harmony between them; and then any person who rents a plot in one of these streets and wishes to build a frontage on it will be restricted to the contents of these eight designs, but each building-owner may take any slice which pleases him best *out of any one of the eight designs*, and erect it. Thus Smith may take a front out of design A; Jones, who has the next lot, may prefer a slice out of design D; and so on. Thus is "architectural harmony" to be secured. That is the only thing we can make out of it; and if that is what is intended, there is only one thing to be said—it is simply ridiculous, and moreover it is a kind of scheme that no architect worth the name would participate in for a moment. It would be infinitely better to invite the eight architects to

enter into a competition, and select the best set of designs and keep to it. There would be something to be said for that; there is really nothing to be said for the other idea, and we are quite confident that the Institute of Architects would have nothing to say to it. The intentions of the London County Council in the matter are excellent, and we must praise them for such good intentions; but unless they listen to better advice the whole scheme will be an architectural *fiasco*.

The third point is in regard to the crescent frontage which is to sweep partially round the St. Mary-le-Strand site. It is very much a question whether a straight street should be carried out on a uniform design or not; there are occasions on which it is justifiable to do so, but perhaps in the majority of cases it is not; at all events, it depends on circumstances, and on the nature of the street and of the buildings which are to line it. But it is quite certain that a crescent loses all its architectural effect unless it is carried out on a uniform design. The fine effect of the sweep of the curve is all gone if buildings or features are to cut into and project above it and break its continuity. In the street lines as at present laid out on the County Council plan there is a symmetrical crescent shown facing the north side of St. Mary-le-Strand, stopped at each end by a square block slightly projecting beyond the crescent line, the two blocks also symmetrical in position and size. Here is the ground plan provided for a grand piece of architectural effect; and if that crescent and its terminations are not built on a uniform and symmetrical design, a great blunder will be made and a great opportunity thrown away. It is easy, of course, to say that such a uniformity of architectural treatment renders it rather more difficult to meet the views of intending tenants, or, in other words, constitutes an additional difficulty in letting; but there are occasions when these commercial considerations must give way to some extent. No difficulty is made about this in other capitals, where architectural effect is more thought of. How did the Place Vendôme or the Rue de Rivoli get carried out? The Government in each case were determined to have a symmetrical square and a stately street, and special interests had to bend to the public interest. What has been done in Paris can be done in London.

THE STAINES RESERVOIR SCHEME.

IN a letter recently addressed to the Editor of the *Times*, Mr. G. Shaw Lefevre discusses the scheme of reservoirs recommended by the Llandaff Commission, for the storage of water in the valleys of the Thames and the Lea. On previous occasions we have heard the views entertained by Mr. Shaw Lefevre as to the desirability of bringing water to London from Wales, and so far as economic questions are concerned, there can be no doubt that his opinions are entitled to every consideration. But Mr. Lefevre now presents himself as an engineering expert, and in this somewhat unaccustomed rôle, he gives a brief discourse upon the construction of earthen embankments, which may, not be accepted as entirely authoritative by those who are familiar with the subject. In the letter to which we refer the suggestion is made that "The Commissioners have dealt with this subject only from a financial point of view," and "that they felt themselves precluded by the terms of their reference from entertaining other considerations, such as the expediency of obtaining a fresh supply of perfectly pure water, and the inexpediency of greatly reducing the average flow of the Thames." Apparently it is the wish of the writer to contribute a sort of unofficial appendix to the Report of the Commissioners, so that the important matters supposed to have been overlooked, shall be duly brought to the light of day. As a result of our own perusal of the Report, however, we gather that technical questions were by no means neglected. For example, we find that several eminent engineers were examined at great length by the Commission, and amongst them, Sir Frederick Bramwell, Sir Alexander Binnie, Mr. R. E. Middleton, Mr. Walter Hunter, and Mr. Charles Hawksley. It is highly improbable that these gentlemen would confine their evidence solely to "financial points of view." Again, we observe that scientific evidence was given by the late Sir Edward Frankland, Sir William Crookes, Professor Dewar, Dr. Shirley Murphy, and other gentlemen who are not usually regarded as experts with regard to monetary matters. Finally, we notice that much of the time of the Commissioners "was occupied in considering an alternative scheme of obtaining from Wales whatever may be necessary in the future over and above the 185½ million gallons a day, now authorised to be drawn from the Thames," and there is abundance of evidence that the Commissioners have fully considered the effects likely to be produced on the Thames by present and future demands for water. Bearing these facts in mind, we fear that Mr. Shaw Lefevre has benevolently taken upon himself a somewhat unnecessary labour—at any rate, so far as part of his letter is concerned. This letter, however, appears further to aim at the communication of really reliable knowledge on the subject of hydraulic engineering. Mr. Lefevre tells us he finds it difficult to believe that the reservoir scheme could be recommended by "presumably sane and intelligent" men; that he is perfectly appalled at the prospect; and that, if a mistake be now made, the consequences will be most serious.

When one man sets himself the task of proving that several other men are deficient in the desirable quality of sanity, he is very seldom successful, and we fear it will be so in the present case. We can quite realise the astonishment with which Mr. Lefevre must regard the extensive works conceived, and partly carried out, by engineers such as those connected with the storage of water in the Thames valley, but we are not fully convinced that he has entirely grasped the details of their construction, or the correct data which are involved therein. The reservoir now being made at Staines certainly has an area of about 413 acres and its capacity will be rather more than 3,300 million gallons, but the outer embankment does not extend for nearly 4½ miles, as its total measurement, including the dividing wall across the middle, is less than the length stated, and the embankment does not, of course, stretch in a straight line for anything approaching such a distance. In respect of height, Mr. Lefevre is even less accurate, for although the bank has an elevation at one particular place of 36 ft. above the surrounding land, the height varies from 22 ft. upwards.

The next point as to which we find evidence of hastily gathered information, is the depth to which excavation has been made. To say that the ground has only been excavated 2 ft. over its greater part, is to convey—though, of course, quite unintentionally—a totally inaccurate impression, for as a matter of fact the minimum excavation is 2 ft., the maximum 8 ft., and the average 4 ft. 6 in. to 5 ft. The thickness of the puddle wall in the centre of the embankment is stated to be 6 ft. to 7 ft., but actually it is 7 ft. at the base, diminishing to 4 ft. at the top and 4 ft. at the bottom. Passing away from these matters of detail, we may now consider questions of principle raised by Mr. Shaw Lefevre. To begin with, we must say that he evidently fails to understand the true object of a puddle wall. It does not, as he imagines, constitute the strength of an embankment to resist the weight of water within the reservoir, but is merely intended as a watertight core, and the whole pressure of water is withstood by the solid earth which forms the backing. In the present instance, that part of the earthen embankment outside the puddle wall is 76 ft. thick at the base, and the weight per yard run of 190 tons furnishes an ample guarantee of strength. The thickness of a puddle wall necessarily varies from case to case according to the quality of the material available, and, so far as this instance is concerned, we rather incline to the opinion that Mr. Middleton and Mr. Hunter, who are responsible for the design of the Staines reservoir, are not likely to derive much advantage from amateur engineering advice. With respect to the criticism that 12 ft. is the proper thickness for a puddle wall, we can only suggest that the writer in question has read something really relative to a retaining wall, or to an embankment placed across a valley and forming a reservoir which is subject to entirely different conditions. In such work it is a general rule to make the puddle of thickness equal to about one-third the height of water in the reservoir, but even this proportion is subject to variation. In America, the internal core is sometimes made of comparatively thin steel plates, and we do not think any one would expect this material to be regarded as affording in itself the necessary resistance to pressure. As to another point raised, that there are no reservoirs of the same size in England, constructed similarly to the structure at Staines, we may say at once there are not. But there is more than one reservoir in London on precisely the same lines, and the question of size is a matter of detail, and in no way of principle. Earthen embankments, essentially of the same formation, and which have to endure far more severe conditions, are to be found in many parts of the country, and one of the finest of these forms the Upper Barden Reservoir of the Bradford Waterworks. This was constructed by Sir Alexander Binnie, and has a height of 125 ft. above the bottom of the valley. With such an example before him, perhaps Mr. Lefevre may feel reassured on the score of danger; at any rate, if this comparatively small reservoir at Staines is of so hazardous a nature as he imagines, what does he think of the risk attaching to the storage of 39,000 millions of gallons, which the advocates of the Welsh scheme propose to hold up hundreds of feet above the heads of thou-

sands and thousands of confiding inhabitants?

There is one error of a very excusable nature, in the letter to which we have directed attention, for the statement that the proposed reservoirs will cover an area of about 6,000 acres or ten square miles, occurs also in the printed copy of the Report made by the Commissioners. These figures would be correct if the Commissioners had recommended provision for a total daily supply of 400 million gallons, but as they have adopted the 300 million gallon basis, the necessary reservoirs will cover only 2,560 acres, or four square miles, in addition to the Staines reservoir of ¾ square mile. Consequently, the total length of embankments will not exceed eighteen miles, and the figures of fifty or sixty miles mentioned by Mr. Lefevre require modification. Notwithstanding the fact that the proposed reservoirs are intended to be scattered over various districts in the Thames Valley, they cannot, one must admit, be regarded in the light of adornments to riverside scenery. The trouble very often crops up in connexion with engineering works that utility and ornament cannot always be combined. Waterworks are more necessary than railways, and perhaps they are more grumbled at, though less unsightly, less noisy, and less likely to pollute the atmosphere. The surrender of four acres is no heavy sacrifice for the future benefit of inhabitants occupying 845 acres, and whose number will probably reach the total of 12,000,000 persons before fifty years have passed.

SUPPLYING ELECTRICITY IN BULK.

THE refusal of the House of Commons last year to read a second time a Bill, entitled "Electric Power Distribution," affecting a large manufacturing area in Nottinghamshire, augured badly for the four important Bills on this subject which were considered by Parliament last week. It was therefore a great relief to many when they were read a second time and referred to a hybrid committee. The discussion was very one-sided, the opponents of the Bill basing their opposition apparently on the proposition that it was opposed to the principles of local self-government for a private company to be allowed to distribute electricity over several local areas. Sir William Harcourt, whilst admitting the importance of the Bills, suggested that they ought to be deferred for another year, so that there might be time for mature consideration of the principles involved, forgetting, apparently, that last year's Bill was approved in its main principles by a strong joint committee of both Houses. It is extraordinary to note that when a politician takes up a subject he generally assumes that all previous legislation on it has been hasty and ill-considered. We earnestly hope that these Bills will become law before the industrial prosperity of this country is further weakened as compared with other countries.

As the Bills are very similar, it will be sufficient to describe the one which is most strongly attacked, namely, the South Wales Electrical Distribution Company. To show how the interests of the Local Authorities have been safeguarded, we may mention that the Company has no exclusive rights (Clause 35), that no retail consumer can be supplied except with the consent of the Local Authority (Clause 34), and that the undertaking may be purchased in forty-two years at a fair market value, with no addition for goodwill (Clause 2).

The company wishes to build three stations at Neath, Pontypridd, and Pontypool, each of which is in the centre of a coal mining district, and to supply "electricity in bulk" by a network of mains to the county of Glamorgan, and the western half of Monmouthshire. The district supplied is a busy manufacturing one, containing steel and copper works, tin-plate factories, and, most important of all, collieries. The area of the district is over a thousand square miles, of which only a little over sixteen are supplied by Local Authorities. The average price charged at present is 5d. per unit. The new company asks for authority to make a maximum charge of 2d. per unit and the promoters expect that they will be able to supply it at a much lower rate. Abroad many manufacturers can get power from the public mains that pass their doors at ½d. or even less per unit. Now ½d. per unit corresponds to 10*l.* per horse power per annum, and steam power in this country costs about 25*l.* per horse power per annum. Hence the British manufacturer who makes his own steam power is severely handicapped as compared with the Swiss or American.

The importance of immediately establishing central power stations near the coal pits and distributing electricity in bulk cannot be overestimated. The recent developments in electrical practice, especially the use of three-phase currents, have made the problem of distributing power considerable distances an easy one. The problem has been worked out thoroughly by several engineers, and it seems that electricity can be manufactured as cheaply from coal near the pit-mouth as it is manufactured by hydraulic machinery abroad.

The Electric Lighting Acts of 1882 and 1888 were absurdly favourable to Corporations, but the history of electric lighting since then has not justified this favouritism. We believe that they have spent under twelve millions of the ratepayers money on electric lighting and traction schemes. Compare this with the 300 millions spent in the United States during the same period. It is possible to travel nearly the whole of the 240 miles between Boston and New York by electric tramway. How far could we get between London and York by this means? Although the Corporations have been so sadly lacking in enterprise and initiative, yet they have been expending the ratepayers' money freely in organising a formidable attack on the Bills promoted by private companies. The *Times*, in a strongly written leader, states, "Electric lighting and electric traction are among the 'rights, privileges, and duties' claimed for municipalities. They have not used their rights, they do not appreciate their privileges, and they are indifferent to their duties or excessively inept in performing them." There are one or two exceptions to this statement, but it applies to many hundreds of municipalities. We fail to see how they could possibly combine amongst themselves so as to manage such an important undertaking as the supplying of wholesale electricity.

Cheap electric power has revolutionised many industries abroad. We may specially mention the many important chemical industries in Germany. It has also had a great social influence. The effect of the introduction of steam was to centralise industries into large factories. The introduction of electric power has, if anything, the opposite effect. At St. Etienne, in France, there are some thousands of workers engaged in making ribbons, laces, fringes, and similar ornamental work. In 1891 the Electrical Company of the Loire was established to supply power both to the town itself and to the surrounding country. The current is generated at two water-power stations and three steam stations and distributed over twenty-four parishes by a system of mains over seventy miles in length. Three thousand of the hand looms are now worked by electricity in the workers' own homes. Some of the master weavers possess two or three looms which are superintended by themselves and the members of their family. There is much to be said in favour of this state of things from the point of view of the political economist. In this country the introduction of cheap electrical power would be a great boon to humble workers in many industries, enabling them to compete successfully with the large manufacturers.

NOTES.

Housing of the Working Classes.

THE Bill brought in by the Government to amend the law in regard to the Housing of the Working Classes does not, so far as regards the rural question, go so far as the suggestions contained in our recent leader on this matter. It makes it a little less difficult for a District Council to erect and manage workmen's cottages, but it does not hand over the matter to the County Council. The Act of 1894 will still remain unused. A District Council has not sufficient independence to take up a housing policy. A County Council has at once the independence and the larger view which are necessary. A District Council is also exposed to suggestions of jobbery. The new Bill is a mere sham so far as the rural districts are concerned. It is better in regard to towns. To enable a municipality to purchase land outside its boundaries for workmen's dwellings is a move in the right direction. Not, however, that it in any way meets the difficult problem as to how certain classes who must be near their work in the centre of a city are to be housed. The Bill is, like all the social measures of the present Government, characterised by weakness and want of breadth. There never was a Government which has made so little use of great opportunities.

Electric Locomotion.

AT the London Institution last week, Professor Silvanus Thompson gave a lecture on electric locomotion. With the aid of very numerous lantern slides thrown on a screen he reviewed part of the history and nearly all the present systems of electric traction. Beginning with photographs of the electric cars running at the Paris Exhibition of 1881, and made by Messrs. Siemens & Halske, he traced the evolution of the modern electric car through all its intermediate stages. The overhead systems at Bristol, Dublin, and Milan were shown. The Bristol tramway, he said, was laid on typical American lines, and was similar to hundreds of others. In his opinion, however, the overhead system was now in the zenith of its popularity, and

would probably soon be superseded by something less unsightly. In suburban districts it was perhaps permissible, but it was quite out of place in crowded thoroughfares. The slotted conduit system was next described, and then the various surface contact systems, finishing with a description of the one invented by the lecturer and Mr. Walker. One advantage of this invention is that by the use of a double skate beneath the car the necessity of using the rails for the return circuit can be eliminated, and hence the danger of the corrosion of gas and water pipes by leakage currents avoided. He also described a novel short circuiting device he had invented which made it impossible for any of the studs on the track to be left "alive" after the car had passed over them. As there will be shortly working in South London alone over a hundred miles of electric tramways, and as the capital already invested in this new industry is over twenty millions, it was of the greatest importance to sift the relative merits of the various schemes. He anticipated that in the next five years the capital invested would be increased at least five-fold. Various Swiss and American railways worked by electricity were also described. The prospects of these railways in this country were never so bright as at present, and we had no intention of falling behind America in this matter.

An Opportunity for the London County Council.

THAT portion of the Metropolis south of the Thames which is supplied with gas by the Gas Light and Coke Company is admittedly of little or no value to the company on account of the clause which compels it to sell gas within this area at the same rate as that charged by the South Metropolitan Company; an obligation which, owing to less successful management, it is unable profitably to fulfil. The South Metropolitan Company is willing to relieve the Gas Light Company of this portion of its district but is not willing to pay the Gas Light Company's price or to submit the matter to arbitration. The questions arise: What value can be placed upon a business carried on without profit? and, What is the value of a gas-works of an out-of-date description situated upon an inconvenient site? If the London County Council are really determined to, sooner or later, follow the example of Birmingham, Manchester, and other towns, and undertake gas manufacture as a municipal business, it is exceedingly improbable that any such opportunity as the present of acquiring this important gas-consuming area at a low cost will ever occur again. The data brought forward by various gas engineers last year before the Powers of Charge Committee, showing that this area was unprofitable to the Gas Light Company, could now be used to combat that very heavy claim for compensation which will assuredly be made at a later date if an attempt be made to secure the same property.

The Latchmere Allotments, Battersea.

UNDER their "General Powers" Bill, as introduced into the House of Commons, the London County Council seek for powers which shall enable the Battersea Vestry to acquire, mainly for building purposes, the garden grounds, covering more than eleven acres, locally known as the Latchmere Allotment Lands. The land, which lies in the midst of a dense population, consisting, for the greater part, of the working classes, forms portion of the former Latchmere Common, appertaining to the waste land of Lord Spencer's manor in Battersea and Wandsworth; after the passing of the Poor Relief Act, 1831, the then lord of the manor consented to the enclosure, by the churchwardens and overseers, of a part of the old common, in order that it might be rented, for purposes of cultivation, by the industrious poor. The larger portion of the enclosed area has since remained for the benefit of allotment holders. The rest was taken, yet it seems improperly, for building sites. In 1887 the Battersea Vestry introduced a Bill—which, however, was lost upon its first reading—for a purpose similar to that of the present project. The London County Council's Bill, which was read a second time last week, will enable the Vestry to acquire half of the allotment-lands for the erection thereon of workmen's dwellings, to reserve about four acres for a children's recreation ground, and to take up the remainder for the laying-out of roads and footpaths.

"Free Wiring."

THE popularity of the system of electric wiring known as "free wiring" seems to be on the increase amongst corporations. The National Electric Wiring Company enter into an agreement with the corporation to wire consumers' premises free of initial cost provided that the consumers pay a penny extra for every unit consumed, the payment being made along with the meter bills, and collected by the corporation. Particularly favourable terms are offered to the consumer. If he is satisfied with the electric light, then he has the option of purchasing the installation, after five years, at an agreed price; but if it is unsatisfactory, then he has no trouble about fixtures, and a new tenant is not bound to take over the agreement with the National Company. From figures published recently by Mr. Vesey Brown, the Electrical Engineer to the Lincoln Corporation, it appears that the class of consumer attracted by "free wiring" is a very profitable one. Although their meter bills may not be large, yet their demand for current is a steady one. In the first year's working of the Corporation lighting station at Lincoln twenty-five per cent. of the consumers had their wiring done by the National Company. This is the more significant as gas is only 2s. 1d. per 1,000 cubic feet there, and the electric light is not particularly cheap. The method of charging for the electric light is based on the "maximum demand" made by a consumer during the quarter. For those units consumed, on which he gets a rebate, the National Company only charge him a halfpenny towards the expense of the wiring. "Free wiring" seems to have met the demand of those who hold their houses or shops on short tenancies, and are naturally averse to putting in fixtures which they may have difficulty in persuading their successors to take over at a reasonable valuation.

Insecurity of Houses in Flats.

Two burglaries that were committed at Cornwall-mansions, Regent's-park, a few days ago, show how inadvisible it is to plan blocks of flats of that kind with several sets of staircases which open into the street, and not to make any provision for the attendance of a hall-porter at each street door. In the one instance the thief, who had been seen loitering about the premises during some days before, ascended the stairs at nine o'clock at night, opened, with a key, the door of a vacant flat on the fifth floor, whence he made his way along the gutter, being partially screened by the parapet, to the adjacent flat, where the occupants were at home. He opened the window of a room in which two children were asleep and secured about twenty-five pounds' worth of jewellery, &c. Returning by the way he had come, he left an empty cash-box and jewel cases in a room of the vacant flat. Singularly enough the flat he robbed was entered one night, four or five years ago, when the thief mounted the stairs, opened an unlocked door leading on to the roof, where he found a ladder conveniently hanging for his purpose. He used the ladder for his descent to the gutter, and made off with various articles of considerable value. On that occasion, too, the occupants were at home and in the adjoining room. In the other instance the tenant contributed to her own loss, for expecting a visit from a relative during her absence for a brief while, she tied the key to the outside handle of her door; returning, she found herself the poorer by more than 30*l.*

LETTER FROM PARIS.

THE Organising Committee of the Fifth International Congress of Architects, presided over by M. Alfred Normand, has prepared the list of its members, and has formed a sub-committee whose duty is to prepare a list of foreign members. The subscription has been fixed at 25 francs. The programme comprises three principal questions: artistic copyright in works of architecture (a question referred forward by the Fourth International Congress, held at Brussels in 1897); the teaching of architecture in various countries; and the question of cheap dwellings in all countries. Correspondence should be addressed to M. Poupinel, General Secretary, 45, Rue Boissy d'Anglas, Paris.

The Salon of 1900 will be held in a temporary and simply constructed building now being raised on the Place de Breteuil. The opening will take place on April 7. All works of architecture must be sent in before March 18. The vote for the composition of the jury will take place on March 20. The amount of space being very limited this year, the jury will reserve the right to apply the regulation permitting the exclusion of any work not strictly necessary for explaining one or any set of drawings.

The past few weeks have shown considerable progress in the general work at the great Exhibition, but although it is stated officially that everything will be quite ready for the opening day on April 15, the present state of the work does not by any means give much promise that this will be so. The work on the Champ de Mars appears to be the most behindhand; a number of the buildings are not yet completed; that of the Château d'Eau particularly, which will play an important part in the working of the Exhibition. Although the building itself will certainly not be finished in time for the opening, yet it is probable that every effort will be made to complete the important water service bringing water from the Seine to the top of the building, whence it will fall over cascades to the level of the Champ de Mars, and thence into the new machine gallery for use in the condensers of the steam engines, &c., before returning to the river. If this water service is not completed early, it will be impossible to set the engines, and the corresponding shafting to work the machines in the interior of the Exhibition, in working order. The interiors of all the buildings are being painted in a delicate green colour, which harmonises very well with the general tone of the wall decorations, which each nation has to undertake on its own account. The decoration of the various English sections has just been commenced.

The immense Salle des Fêtes raised in the centre of the old Galerie des Machines is rapidly being decorated with plaster and colour, but will hardly be ready for the opening ceremony. The Alexandre III. bridge is now completed, and the four fine lions, due to the talent of the sculptor Gardet, may be seen in front of the decorative pedestals on each side of the entrances to the bridge. The buildings of the Esplanade des Invalides are well advanced, the exteriors are now being painted in various brilliant but effective colours, and the exhibitors' work in the interiors is well advanced. On the Quai d'Orsay the buildings of the various nations are all nearly completed, and the general effect from the river is very attractive. The English Royal Pavilion now only requires a few touches on the exterior for completion, and the various firms commissioned to decorate the interior are putting their work rapidly in hand. There is now little doubt that this exhibition will be an exceedingly fine one in every respects; at one time it was feared that the undertaking, far surpassing previous exhibitions, was too great a one to be brought to a successful result, but with the allowance of three weeks' or a month's delay after the opening day all will be ready.

The last vestiges of the old Palais de l'Industrie are now disappearing, and the vista along the magnificent new avenue between the two new Fine Art Palaces, across the Alexandre III. bridge, as far as the dome of the Invalides and between the temporary buildings of the Exhibition on the Esplanade des Invalides, now gives a good idea of the future effect of the avenue when the whole building work is quite completed and the present scaffolding taken down. The Grand Palais is by no means finished as regards its interior, but the façade along the Avenue, now that the sculpture work is being uncovered, is very effective. The sculpture on the exterior of the Petit Palais is also nearly completed—the two interesting pediments with sculpture by M. Peyrot, the bas-relief, representing Science, and the bas-reliefs of groups of children by M. Carlés are very fine. M. Injalbert has decorated the panel of the main entrance with a bas-relief representing the Ville de Paris, cherishing the Seine languidly reclining at her feet, surrounded by figures of the Muses and of Apollo, whilst on the right and left hand are figures representing the Ocean and the Mediterranean bringing their offerings. M. Charles Desvergnes has adorned the opposite façade with two charming groups, symbolising Archæology and History.

The fitting of the giant Siderostat of M. Gautier is now nearly completed. The telescope, which is nearly 200 ft. long and 5 ft. in diameter, is already in its place, and the dome of the siderostat, weighing 70 tons, is nearly complete. The mirror alone weighs 4 tons, the objective has a diameter of a little over 4 ft.

The immense Celestial Globe, due to the ingenuity of M. Galeron, architect, although having been much delayed by the recent strikes, is now nearing completion as far as the construction itself goes. The sphere representing the universe is 150 ft. in diameter, and the small globe representing the earth, in and on which the spectators will take their place, is 26 ft. in diameter. Inside the larger sphere is another globe of a diameter of 115 ft. The ground on which this immense construction is built was compressed by means of heavy weights falling from a great height, a system which has been much employed in the work of the Exhibition. The foundations are formed of a system of iron rods embedded in cement, called the Matrai system. M. Galeron has been skilfully seconded in his scheme by Mr. Roy, a well-known architect.

The municipal committee of "Vieux Paris," which, during the two years of its existence, has already contributed to the preservation of many historic remains, is preparing for the Ville de Paris Pavilion in the great Exhibition, an interesting reproduction of the old plan of the "Tapisserie," well known to archæologists, which was executed between 1512 and 1547, but has long since been destroyed. An archæological plan will indicate the excavations carried out by the committee. A geological plan will give the composition of the subsoil of Paris. In glass cases will be placed the arms and objects of all kinds found during the excavations. A series of drawings and photographs, executed under the direction of M. Detaille, will illustrate the principal curiosities of old Paris. In the collection will figure especially the view of the ancient hunting pavilion of the director of the Gobelins under Louis XV., which will be shortly demolished, and which is one of the best specimens of the French architectural taste of the eighteenth century. The collection will include, also, the plan in relief of the Place de Grève, which is now the Hotel des Invalides.

M. Jules Guiffrey, Director of the Manufacture des Gobelins, has decided on the choice of the wall-hangings and carpets for exhibiting at the coming Exhibition. There will be forty-nine pieces of wall-hangings and six carpets. Amongst the artists who have made the designs are MM. Jean Paul Laurens, Joseph Blanc, Albert Maignan, Libert, Jacques, Luc Ollivier-Merson, and Lavestre. The largest of the wall-hangings measures 7 mètres by 5.

M. Roty, the eminent medallist, has already modelled a commemorative tablet of the Paris Exhibition. It represents the century which is just concluding by a female figure holding in her hand the torch of progress, which a young winged genius representing the twentieth century is eager to receive from her. Over her head is the foliage of an oak, on which strikes a ray of the sun, with the dates "1801-1900." On the other side of the tablet is represented, beneath a garland of roses and laurel, a perspective view of the Avenue Alexandre III., as seen from the Champs Elysées. On this face is also the inscription, "Exposition Universelle Internationale de 1900." M. Roty is also executing two other medallions, commissioned by the department of the Seine, and by the Municipality of Paris; the first commemorates the building of the prison at Fresnes; the second the addition of the waters of the Avre to the Paris water supply.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL general meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, when the Royal Gold Medallist for the current year was elected. The Chairman moved: "That, subject to her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented this year to Professor the Commendator Rodolfo Lanciani, Correspondent de l'Institut de France, D.C.L., Oxon. [Hon. Corr. M. Rome]." This having been agreed to, the ninth general meeting (business and special) of the Session 1899-1900 was held, when the election took place of candidates for membership under By-laws 7, 8, and 9. The following gentlemen were elected: as *Fellows:* D. B. Niven, of London; W. E. Riley, Superintending Architect to the London County Council, Spring Gardens, S.W.; and H. H. Wigglesworth, of London. As *Associates:* F. H. Allen, Northampton; W. H. Ansell, London; S. E. Barrow, Lancaster; F. W. Ashton-Buckell, London; T. J. Byrne, London; Bessie Ada Charles, London; D. McLeod Craik, London; A. H. Foster, Belgravia, S.W.; F. Foster, London; S. H. Hamp, London; J. H. W. Hickton, Walsall; M. Honan, Liverpool; H. E. Illingworth, Leeds; A. R. Keighley, Liverpool; T. A. Moodie, London; J. E. C. Shield, London; J. E. Spain, Rand St. Oswald, Wragby, Lincs.; R. H. Spalding, London; F. Taylor, Aylesbury; R. Traquair, London; T. Tyrwhitt, London; H. Watts, Plymouth. As *Honorary Fellow:* The Right Hon. Sir Richard Temple, Bart., LL.D., F.R.S.

A further special general meeting was then held, when the adoption of the following recommendations of the Council was moved by the Chairman and carried:—

1. That in By-law 25 the words "thirty-six" in the first line be altered to "thirty-eight," and that the word "two" in the second line of Section (*a*) be altered to four.

2. That in By-law 29 the second sentence be altered so as to read, "Any Associate shall be eligible to serve as an Associate-Member of Council."

3. That in By-law 30 the word "three" in the seventh line be altered to "six;" and further that the words "but the names of members of the existing Council shall be distinguished by an asterisk" be omitted from the same by-law.

The meeting then terminated.

MAGAZINES AND REVIEWS.

THE *Art Journal* includes an article on "Venice" by an Italian contributor—Signor Pompeo Molmenti; and a melancholy article it is, but one that every one should read. It is partly a description of Venice of the last century, partly an account of the gradual process of destruction of the poetry and beauty of Venice which is now being carried on under the auspices of municipal authorities who look only to the present and future, and for whom the great past of their city has no charm and no sanctity. Venice the unique is being ravished from us bit by bit, and there seems no power of staying the hand of the spoiler. Will no American millionaire *buy* Venice while yet there is some of it left, and immortalise his name by keeping the city unaltered as a possession for the world?

The *Architectural Review* (Boston, U.S.A.), Vol. VII., No. 2, is entirely occupied, as far as the illustrations are concerned, by Mr. Ernest Flagg's large scheme for the proposed rebuilding of the United States Naval Academy at Annapolis; a very large scheme with a very *Ecole des Beaux-Arts* appearance about it, and concerning which there is no information as to whether it is really a practicable scheme or only an architect's fancy. We observe, by the way, that the *Architectural Review* never gives its readers any information in regard to the plates, which are left to speak for themselves. This seems an omission. In the case especially of buildings which are being erected for modern uses, a little information as to the materials employed; the special conditions under which the architect had to work in regard to site, requirements, &c.; and the cost—would surely add to the value of the illustrations. Among the contents of this number is a lecture delivered—it is not stated where—by Mr. Lethaby, on "The Place of Gothic Art in Civilisation;" a *couleur-de-rose* sketch of the mediæval cathedral in its relation to mediæval life; picturesque and eloquent, but presenting the usual fallacy of mediæval enthusiasts in considering only the picturesque and artistic aspect of mediæval life, and ignoring altogether the superstition and violence which were rampant in those days. Twenty-four hours, or at all events a week, of actual mediæval existence, could we resuscitate it, would probably go a good way towards clearing people's conceptions on this point. All that is left to our perceptions is the beauty of mediæval art; the other side of the picture has vanished, though it may be pretty well gathered from history, for those who do not wilfully shut their eyes to recorded facts. The nineteenth is a better century to live in than the thirteenth, despite the cathedrals.

The *Studio* (February 15) includes an illustrated article by Mr. M. H. Baillie Scott on "A Country House." The plan is a pleasant and original one; the interiors of the rooms illustrate the ideal of the writer, that "we should begin by such a humble standard as is implied by the mere omission of the vulgar, and then, when our homes are purged of all vulgar and painful things, let us add by slow degrees, with careful and exclusive choosing, such few and choice ornaments as may be required." This is an excellent position to take, but is it quite necessary to begin by reducing things to such excessive simplicity as in the sketch of "The Hall & Bower" on page 35? This suggests to our mind the tap-room of a country public-house, rather than the home of cultured people. However, there is no doubt that vulgarity and commonplace have such a hold on the fittings and furniture of dwelling-houses, that perhaps a little exaggeration in the opposite direction is almost necessary in order to produce any effect on the tastes and habits of the day. In the same issue a long article is devoted to the works of Mr. Sargent. The author of the article appears to be conscious of Mr. Sargent's limitations:—"He is a clever man . . . perhaps a great one, but he has no sweetness, no suavity of manner, and prefers to caricature the defects of a peculiar type than to seek out those latent possibilities of idealisation which it is the duty of every self-respecting painter to discover at all costs." This is perhaps not intended as the opinion of the writer (Mr. A. L. Baldry) so much as an expression of the manner in which Mr. Sargent's art strikes the average beholder. This criticism, however, has to some extent we think ceased to be true; it was perfectly true of Mr. Sargent's portraits some years ago, but he is gradually outgrowing it and settling

down into a more central position and broader sympathies. We agree with the verdict that "on him has descended the mantle of Velasquez"—more, that is to say, than on any other living painter.

The *Berliner Architekturwelt* gives front and quadrangle elevations (but no plan) of the new municipal buildings at Berlin; a dreary though respectable piece of architecture. The decorations for some of the German restaurants for the Paris Exhibition form a portion of the illustrations; they seem to have adopted the worst side of recent French taste in furniture and decoration. Among the new buildings illustrated the Hohenzollernschule at Schöneberg is a design of some picturesqueness and originality.

The *Engineering Magazine* contains an interesting article on "Secretiveness in Industrial Works," considering the question under what circumstances secrecy is or is not beneficial or desirable. Generally speaking the author (Mr. Outerbridge) is in favour of free interchange of information, as being for the general good and general progress. Among exceptions he mentions, for instance, a judicious arrangement of standard machines so as to tend to enlarge output and lessen the cost of production; this would not be patentable, and the manager might reasonably wish to keep the idea to himself. Among the other contents of the number is an article on "The World's Supply of Copper."

Feilden's Magazine includes articles on "Modern Appliances in Gas Manufacture," "Pneumatic Tools and Appliances," and the continuation of an interesting illustrated history of the construction of the North Central Railway — of course from an engineering point of view, and containing a good deal of information as to special difficulties met with in the construction of the line, and the manner in which they were met.

The *Fortnightly Review*, which is very largely occupied by articles bearing on the war, contains also one by Mr. H. H. Statham entitled "The Truth About Ruskin," the main drift of which is that Ruskin was a great prose-poet and exercised a great influence in stirring up public enthusiasm about art, but that as a teacher—in architecture especially—he is totally fallacious and misleading.

Blackwood, true to its traditions (every one must remember General Hamley's admirable travesty, "Mr. Dusky's Criticisms on Art"), has a trenchant onslaught on Ruskin, every word of which is true as far as it goes, only the critic rather shuts his eyes to the redeeming sides of Ruskin's character and writings. He sums up—"If the all important thing be not the author's message but his manner of delivering it, not what he has to say but how he says it—if, in brief, matter counts for next to nothing and form be all in all — then Mr. Ruskin occupies one of the foremost places in the ranks of our English prose-writers." We recommend Ruskin devotees to read the article; it is a little rough, but it will be good for them.

The *Contemporary Review* contains also an article on Ruskin signed "Julia Wedgwood," and which, though that of a devout admirer, is neither commonplace nor one-sided. It conveys, we think, very correctly and in a sympathetic manner the kind of influence which Ruskin had in promoting a love for and observation of nature on the part of those who had it not in themselves. In regard to the waves and the clouds "Ruskin," it is observed, "did for every reader what spectacles do for a short-sighted person." No, not quite for *every* reader. All persons are not shortsighted, either mentally or physically; a fact which seems to be rather overlooked by many who may, no doubt, say that their own eyes were opened by Ruskin; but they have no right to speak for others whose vision is not similarly limited. The *Contemporary* also contains a thoughtful article by Mr. Robert Donald on "Housing the Poor." He points out that few of the municipal housing schemes have directly helped the poorest class. The Guinness Trust buildings are mentioned as the only housing scheme which gets really "down to the poverty line." But this Trust, we must observe, is really eleemosynary, since its promoters are content with 3 per cent. returns, which go to erect more buildings. The following suggestion is made at the close of the article:—

"Behind the housing problem is the land problem. Unless some portion of the burdens now borne by houses are transferred to the sites on which the houses stand, rents will always remain high, and the community, as a whole, will be creating wealth which does not bear its fair share of taxation. It has been said that a house in the suburbs of a city is six times the value of its site, but a site in a crowded centre is six times the value of the house. While the house deteriorates, becomes 'unfit for human habitation,' the value of the land on which it stands increases. Were this site valued and taxed as a separate asset, the burden could be spread over house and land on a more equitable basis."

Scribner contains an article by Mr. G. F. Pentecost on "The Renaissance of Landscape Architecture," by which rather vague term the writer seems to imply the designing of formal gardens. From an English point of view the article is rather out of date, as it only repeats the kind of advice and criticism with which we have been familiar for a good many years back. "New York at Night," by Mr. Jas. B. Carrington, is a picturesque subject affording opportunity for some effective illustrations. Under the heading "The Field of Art" is some talk as to the influence of the photograph on portraiture. The only new remark however seems to be that the multiplication of photographs has led to a demand for greater accuracy of representation in painted portraits, which is possibly true. As to any probability of photography taking the place of portrait painting, all the several contributors to the discussion are (wisely) agreed that there is no chance of such a result; people have still, and always will have, too much value for the individuality of interest in a portrait by an able artist.

The *Century* has no article bearing on art, but contains two engravings from Turner by Mr. Timothy Cole—"The Building of Carthage" and the "Témeraire." The latter is hardly a success; it is too black and does not symbolise fully the colour of the original. The "Carthage" is a fine translation into a broadly handled wood-engraving. The article on "The Warfare of Railways in Asia" is, as might be expected, rather political than engineering, but it may interest those who are likely to be concerned, either in a financial or in an engineering sense, with railway development in Asia.

Harper, though a good number (Mrs. Humphry Ward's new story on Roman ground seems to us, so far as it has gone, the best thing she has written), contains nothing specially of artistic interest.

Longman's Magazine contains a very interesting paper by Mr. E. B. Shuldham on "Colour in Relation to Temperature." The idea of looking into the subject occurred to the writer when observing that, among the roses on the table at a dinner party in a heated room, a light-coloured rose gave a sensation of coolness to the touch, while a red one did not. This might have been association of the idea of warmth with what is called a "warm" colour, but the writer subsequently had his idea tested at the Normal College for the Blind at Norwood (as well as on a good many other occosions), when there seemed no room for doubt that certain colours gave a sensation of warmth to the touch as contrasted with others. The subject is rather new and the article is worth attention.

The *Revue Générale* contains an article by M. Arnold Goffin, which, in the form of a review of an exhibition of religious art, enters into the question of the position of religious art in the present day. M. Goffin appears to indicate that on the Continent and in Catholic countries, as in England, there is to be found among the clergy a great deal of false taste for a conventional religious art which is in reality a mere shallow imitation of the forms of mediæval art without their spirit. The great defect, he considers, of modern religious art on the Continent, as with us, is the want of genuine and sincere feeling — the mere adoption of forms from which the spirit is absent.

Moring's Quarterly contains a well-written article on "Siena, Its Architecture and Art." By the way, in stating the fact that "Siena is essentially a Gothic city," we think the author makes quite a mistake in the remark that "her position on the hill-tops settled that, if it be true that the level lines and broad masses of Classic building require the widely spreading plain for their fitting development." The contrary is the case in practice. Level plains are the country of tall spires, and the level lines of Classic buildings contrast most effectively with irregular lines of hills and rocks: witness the Acropolis at Athens.

The *Antiquary* includes a short notice, with a sketch, of Headington Cross, Oxford, and an article, by Mr. G L. Apperson, on a rather curious and out-of-the-way subject, "The Early History of Manifold Writers and Copying-Machines."

The *Gentleman's Magazine* includes a short notice of "Ruskin Hall—the Poor Man's College," which gives information as to this institution and the way it is managed.

The *English Illustrated* includes a popular article on "Famous Railway Stations," among which is numbered the small country station at Brough in Yorkshire, which claims to be pre-eminent in England for horticultural display.

We have received also the *Pall Mall Magazine* and the *Genealogical Magazine*.

CARPENTERS' HALL LECTURES:

THE DESIGN AND CONSTRUCTION OF CENTRAL STATIONS.*

THE subject on which I am privileged to address you this evening is one which at first sight might not, perhaps, be considered of general interest. The popular idea of a central station is a plain, factory-like building, usually with a large chimney stack—a mere home for machinery—in the design and construction of which cost is a primary consideration. As such, it does not appear to be a structure which appeals particularly to the architect. This idea is only correct to a very limited extent, and a closer consideration of the subject will, I am confident, disclose that, although the *raison d'être* of these buildings is to protect the machinery and plant, and the staff working them, they are very far from being mere shelters or enclosures for machinery. They are already buildings of some size and considerable importance, possessing many points capable of architectural expression, while in regard to special points of construction they are, even in their present stage, full of interest.

In the design of these structures the engineer and the architect are very closely connected, and they already afford opportunity for the exercise of both the science and art of construction, and in the future this must be even more the case if they are to be really suitable for the important purposes they are designed to meet, and I hope to-night to show that the architect, accustomed as he is to apply his knowledge of building methods to many and widely different purposes, will find full scope for his art in the design and construction of central stations. These buildings are frequently called electric light stations, and the title originated in the early days when lighting was the principal purpose for which the current was required; but this is no longer the case, and the name "central station for generating electricity," called shortly central station, is now more frequently used, and is a much better term to employ.

Before proceeding to consider the matter in detail, it will not, perhaps, be out of place, first of all, to explain what a central station is, what was its origin, to review shortly its development, to consider its present use and significance, and what purposes it is designed to meet. From this we shall most easily deduce what considerations govern the design of these structures, and what points should be kept in view when deciding on the most suitable construction to adopt, in order to meet in the most complete manner all the conditions required in these buildings. A central station, then, is a co-operative establishment in which the mechanical power required by a large number of persons is concentrated on one spot and worked under one management, and from it as a centre the power generated is distributed to all who require it. It is the outcome of scientific progress, and is one of those works which involve the adaptation of known things to new requirements, the novelty of the application in many instances amounting almost to invention. The effect is to economise the capital and time of the individual, to do away with the waste of labour, space, and material inseparable from a number of small installations of machinery, and to enlarge the scope of manufacture by placing the exact amount of power required, in the cheapest and most convenient form, within the reach of every one, and to render the use of power possible in many trades in which in any other way it would be unattainable. The value of such an establishment was first realised, many thousand years B.C., by the Asiatic peoples, who, by con-

* A lecture delivered at Carpenters' Hall by Mr. C. Stanley Peach F.R.I.B.A., on March 1.

structing "irrigation centres" (many of which are, I believe, in operation to this day), brought into cultivation large tracts of land which otherwise would have remained desert. A modern instance of the immense benefit which is derived from works conducted on the principle of the central station is the irrigation centre established in 1849 by Brigham Young in the mountains above the great Salt Desert in Utah, by means of which this desert was converted into one of the most beautiful and fertile spots in the world, and a people were not only enabled to exist, but to work many industries and amass great wealth by the water power.

Many other forms of central stations will occur to all of you, such as those for distributing hydraulic power, steam, hot air, gas, &c., but those which chiefly engage our attention to-night are central stations connected with the generation and distribution of electricity. It is immaterial for what purpose the current, when generated, is used, nor is it any longer necessary or desirable to differentiate between stations which supply power for traction or lighting purposes, as within a very short time both will be combined in nearly every station.

The process of exciting electricity from a passive to an active state, which we call generation, is at present usually accomplished by steam-driven machinery, and no doubt many of my audience will be inclined to say at this point: there have been machinery houses, boiler rooms, and chimney shafts of all kinds and for innumerable purposes ever since steam came to revolutionise the world, and that there is no necessity for central stations to be different from them; but it must be remembered that the amount of power generated in these buildings hitherto has been relatively small. It was used in the immediate vicinity of the plant, and its application was confined to a particular purpose. In central stations the power developed is already very great, is daily increasing, and will shortly be immense. It is distributed to any point at which it may be required. It can be used simultaneously for innumerable and widely different purposes—to illuminate a house, to cauterise a wound, to turn a lathe, to work a lift, to forge a cannon, to solder a joint, or propel a train. An interruption to the working of the machinery department of, say, a mill or factory practically affects only the particular business concerned. The interruption of the supply of power from a central station might plunge a city or district in darkness, stop the traffic of the tramcars, and generally disorganise various industries dependent on it. Once started, it must work uninterruptedly day and night, year in and year out. It is in such respects primarily that central stations differ from what has been done in the past, and it is these differences which, re-acting on the buildings, necessitate new arrangements and special methods of construction.

The origin of the central station then is of considerable antiquity, but its modern development, viz., the central station for supplying power, dated from the discovery that power could be used at a distance from its point of generation.

The foregoing sketch of the origin, use, and importance of central stations would not be complete without a reference to the legal and commercial history of the industry of the supply of electricity. As you all know, buildings are subservient to legal regulations, to which an architect must have regard when preparing a design; but, as will be seen later, the laws in force when central stations were first required did not altogether cover the new and, in some respects, distinctly special conditions. In regard to both the industry and its buildings, the commercial and legal history are one. The whole industry of "Commercial Electric Supply" was almost strangled at its birth by the laws which it called into existence. The subject was approached by Parliament with a nervous dread of granting a monopoly. In its anxiety to avoid this, conditions were imposed which gave the Local Authorities power to purchase the undertakings on such terms that commercial enterprise was made impossible. This was in 1879, when, although a Select Committee expressed the opinion that "electric light is an evolution of scientific discovery which has been in active progress during the whole of this century," and although the object of this committee was to advance that progress, yet the Act of 1882, which was the outcome of their deliberations, brought the industry practically to a standstill for a period of nearly eight years. This is shown by the fact that of sixty-nine provisional orders granted in 1883, only seven now remain in force and little or no work was done under them, and that from 1884 to 1887 only five were granted at all, of which none now exist. The whole matter had, therefore, to be raised again, and an amendment Act was passed in 1888 which greatly modified the onerous purchase clauses of the Act of 1882, with the result that in 1889-1890 178 orders were applied for; eighty-six were granted, of which sixty-nine are still in force, and progress became active once more. Work was carried out, I believe, in every case.

As soon, however, as buildings of some importance became necessary new difficulties cropped up. It was found practically impossible under the existing building laws to construct the kind of buildings necessary. Fortunately, however, about this time a new Building Act was in contemplation. The buildings erected, and in course of erection, proved conclusively that some alteration of the law was necessary, and that concessions must be made in their favour. Representations were made to the London County Council, who were promoting the Bill, and it was pointed out to them that it was impossible at the moment to foretell what the future requirements of these buildings would be. The Council and the Committee who were considering the Bill took a broad view of the whole question, and a clause (203) was inserted in the London Building Act of 1894, which for all practical purposes exempts these buildings from the provisions of the Act, subject to the approval of the London County Council. This was a great gain, and shows not only the importance which the subject had now assumed, but also how the enterprise was gradually freeing itself from legal trammels, and how, as these were removed, it made each time greater and still greater strides.

Under the present Building Act the architect of a central station is now given a fairly free hand. The County Council from time to time, as plans have been submitted for approval, have considered them with the same open mind with which they approached the question when it was before Parliament, and there seems no reason to doubt that the central stations which have been built since the Act was passed, and those which are being built now, are not only well adapted to their purpose, but are as strong and fireproof as any other buildings carried out strictly in accordance with the regulations of the Act.

Last year saw yet another new phase, which is not only the greatest concession of all, but is one that will, if I mistake not, give rise to further immense developments in the industry, and will bring about great changes in the buildings. It will probably also introduce an additional type of central station. Parliament, recognising that electric supply companies are great public bodies, and that the public interest is best served by facilitating their operations, passed the Electric Lighting (Clauses) Act, 1899, by which sites for buildings can now be acquired by compulsory purchase, and central stations need no longer be erected within the boundaries of the district they supply. Further, the practical effect of the Act is that buildings erected on sites acquired in this way possess certain privileges, among them being immunity from injunction or action for causing a nuisance or for annoyance arising from vibration, and other matters inseparable from building operations, and which cause building owners and architects much trouble. Such is very generally the legal position of the industry.

Now as regards the commercial aspect. There are now 438 bodies (municipalities or companies) in the United Kingdom possessing provisional orders for the supply of electricity, of which 191 are now supplying current; fifty more will shortly do so. Nearly 300 central stations have been erected in the course of the last eleven years, of which all but a few are complete, and many more will shortly be commenced. Machinery of over 400,000 h.-p. has been put in; over 100,000 h.-p. being in London alone; the current generated is sufficient to illuminate over 12,000,000 lamps of 8 c.p. each, or their equivalent; over 160,000 consumers are taking current for various purposes, and the districts allotted contain upwards of 20 millions of inhabitants. The capital invested in the industry exceeds 32,000,000*l.* (of which about 8,000,000*l.* is represented by London companies), and with that of the allied manufacturing industries called into existence and supported by it, 58,000,000*l.*

This brings us to the end of both the legal and commercial history of the subject. It has taken, perhaps, rather more than a fair share of the time at our disposal, but the points which are vital to a successful design for a central station are to be found in the history of the industry, its development, present magnitude, and the future which lies before it, and to this end this portion of the subject must not only be studied but thoroughly mastered.

A simple illustration will make the development clear. Before you are a large number of plans of central stations. The small plan is that of a central station commenced in 1886-87 at Little Chapel-place, Broadway, Westminster, and was among the first that gave a public supply of electricity in London. The plan of St. Luke's central station of the County of London and Brush Provincial Electric Lighting Company, Limited, erected nine years later, is a fairly typical recent building. Both plans are to the same scale, ¼ in. to 1 ft. On closer examination you cannot fail to be struck by the marked difference in arrangement and construction. The power contained in St. Luke's station is more than seventy-five times greater than that in the Broadway station. I also show the plans of the station now in course of erection by the Battersea Vestry, and therefore, of course, a still later building. Below the plan of St. Luke's is the site plan of one of the latest types of stations shortly to be commenced for the Central Electric Supply Company. This is to a scale of 22 ft. to 1 in. You will observe that, although to a very much smaller scale, the area of the site covers nearly the same extent of paper as the ¼-in. plan of St. Luke's. The Broadway Station has a cubic capacity of 16,384 cubic feet; St. Luke's Station a capacity of 1,736,128 cubic feet; the Battersea Station a capacity of 2,300,000 cubic feet. The station of the Central Electric Supply Company, when completed, will have a capacity of no less than 15,500,000 cubic feet.

This illustrates the development by size in a general way, but the engineer could tell you of much greater and far more important mechanical and electrical changes and progress which it is neither my province nor within my power to explain. These changes do, however, affect and modify both the design and construction, and, though we cannot to-night deal with the cause, we shall see the effects in the arrangement and construction of the buildings as the views of some central stations and of the principal divisions are exhibited. As they pass before you I will explain the general arrangements which obtain at the present time, and point out special features which assist in our final consideration of the subject. In this way you will, I trust, get a much better idea of the matter than any verbal description of them, room by room, could give you. The views will be presented as nearly as possible in chronological order, commencing with the earlier stations.

[At this point slides giving views of the principal rooms of the following stations were exhibited on the screen:—Chapel-place, Eccleston-place, Davies-street, Millbank-street, Masons-yard, Carnaby-street, City-road, Chelsea, City and Waterloo Railway.]

Round the room are a large number of designs, and among them some specially interesting plans which will repay examination. Those of the South London Company's Station show the combination of a central station with a dust destructor, kindly lent for exhibition by Messrs. Kincaid, Waller, & Manville, the engineers and architects. There are also other plans and details which will give you a fair idea of the arrangement and construction of many kinds of stations both in London and the provinces, the Macdonald Road Station of the Edinburgh Corporation (of which the drawings were kindly lent by the architect, Mr. Cooper, and Professor Kennedy, the engineer) being one of them. The first part of this station is now complete, and the station when finished will be a large one. The elevation possesses considerable architectural merit, and it has not by any means a factory appearance. The stations of the Corporations of Oldham, West Hartlepool, Belfast, and many others will give you some idea of what is being done in other parts of the country.

It now only remains to deduce some points which must be borne in mind in the design to indicate some of the conditions which affect,

the construction, and to suggest some of the methods which are likely to prove suitable to meet the requirements of the special kind of buildings which are necessary in connexion with the industry.

Now, as I have already indicated, most of the points are to be found in the history of the circumstances which have created the necessity for the buildings rather than in the "bricks and mortar" of any building of the kind already existing. The first deduction to be drawn is that these undertakings being for commercial purposes economy is of paramount importance. But by economy is not to be understood mere cheapness, which is so often mistaken for it. In the case of central stations a building of which cheapness is the great feature nearly always is the least economical in the long run. Many of these buildings put up in the early days have already been pulled down and new ones built in place of them, and numbers more will meet the same fate in a few years. As we proceed you will see for yourselves, I trust, in what way economy can best be obtained. I think we may take it that in central stations it can best be secured by justly estimating the limitations of the present, while bearing in mind the requirements of the future, and that it is only by doing this that we can produce suitable arrangements for conducting the business to commercial advantage, which is the essence of the whole matter. The buildings must never become obsolete, because their value at the end of the term granted by the provisional order depends on their fitness and the possibilities for further use existing in them at that time. Fitness and durability, then, rather than mere cheapness, should be the aim and should influence the plan, the kind of construction adopted, the selection of every material, and the disposition of the material in the structure.

The points, therefore, which I recommend for your consideration are those which tend to produce a structure which will not only be fit during the term of the provisional order, but that will remain suitable for its future work when its present owners may be called upon to assess the value of their undertaking, and these points may for convenience be dealt with under four main heads, viz.: 1. Adaptability. 2. Strength. 3. Incombustibility. 4. Architectural Treatment.

Now, *adaptability* is a wide term when applied to a central station, and it comprises a great deal more than provision for expansion over a site of which the limits are known, or extension in any probable direction.

It must not be forgotten that although great progress has been made, we are nevertheless at the very beginning of public supply of electricity from central stations, and that finality is as remote as ever. The Act of 1899 cannot fail to produce great changes, and unless the buildings which are now about to be erected are designed with a view to the future as well as to meet the immediate requirements of the present, the same waste which took place when many of the earlier central stations were built will again result. By what means adaptability is to be obtained is, of course, a matter of individual judgment. In many instances the object will be met by constructing the buildings with the fewest number of fixed points of support, by arranging all other parts of the enclosing structure, or the divisions of the structure in such a way that they can be easily and quickly removed without interfering with plant which is working, without the necessity of shoring, and without causing dust or dirt; in providing a sufficient margin of strength in each part of the structure at the time that it is erected to admit of indefinite increase in size, or what amounts to the same thing—constructing these buildings in bays which are independent of their surroundings and derive no lateral support from them; in apportioning to the several departments such relative proportions that they are compact in the first instance, and remain so, both in relation to one another and to the whole building, no matter what extensions take place. This point is of the greatest importance, and it has not hitherto received the amount of attention it deserves. If it be carefully considered in the design, it will greatly facilitate the engineers' work, especially in arranging the pipes—the veins and arteries of the whole system of machinery.

Every part of the structure and contents of the building should also be accessible. Nothing should be crowded, and there should be ample space everywhere. Means should be provided for taking in or out any piece of plant or machinery without interfering with the work of the station or other pieces of machinery. The plan should be as simple as it is possible to make it, as simplicity and repression are the merits of this class of work. In short, adaptability consists in making the building as flexible as possible. Naturally, it is no easy task, but it is a feature which the engineer will expect the architect to provide, and the great power station which is coming into existence now, if constructed without adaptability as an essential feature, will prove an incumbrance rather than a benefit to its owners; for it will be found impossible, except at enormous expense, to alter, enlarge, or adapt it hereafter without practically shutting down, which would be a very serious thing indeed.

The second point is *strength*. It has been pointed out that strength is necessary for adaptability, but apart from that, it is an important element in central station construction. Almost everything which causes decay or destruction is present in these buildings to a greater extent than usual. The elements, fire and heat, water, wind; the mechanical forces, vibration, rough usage, accident; and various chemical actions all unite in testing the strength of these structures to the utmost. As a rule, the site which is found most suitable for industrial purposes is not the site best fitted for building. Foundations which are good enough for ninety-nine buildings out of a hundred are quite inadequate for a central station. Central stations are often erected on the banks of rivers or canals, generally by the side of railways, and in the future this will more frequently be the case. Clay soils with soft underlying strata will consequently be frequently met with, and such a subsoil must be treated in a special way, otherwise failure must result. So rapid is the development of the industry that for many years to come central stations must necessarily be constructed as quickly as possible. All these things must be taken into consideration when deciding how the necessary strength is to be provided. You all know that it is not obtained by mere mass of material, nor even by the qualities of the materials themselves, but that the arrangement of the structure has a great deal to do with it. A bird's nest is built of the weakest materials, but it requires a considerable effort to tear many kinds of nests in half. A beaver's hut and its dam are constructed of small branches, generally rotten, and cemented with earth without admixture of lime or cement, but the hut resists great pressure, and even a heavy flood rarely injures the dam. These are simple illustrations, but they make my point clear, which is that arrangement is one of the most important elements of strength, which must be constantly borne in mind in designing these structures. The same end may be reached in directly opposite ways, either by concentrating the weight of the structure and the load it has to bear as much as possible, or by distributing both to the greatest extent. By the first method it is easier to remove parts of the structure without unduly stressing what remains. By the second, the strength of the structure remains constant, and extensions can be carried out without interference with the comparatively small number of points at which the load is carried; and, as I pointed out when dealing with adaptability, the latter is the system that will probably meet with more general approval. The drawback to concentration of load is that mechanical vibration which is always present in these buildings affects the structure unequally, and in long walls and great heights two distinct movements are set up, one horizontal and one vertical, which start from arbitrary centres and cause curious and awkward settlements at the extremities, or at points of resistance, or where buttresses or cross walls occur, and precautions must be taken accordingly.

Distribution of load does not get over the trouble which arises from mechanical vibration. It merely removes it from one part of the building to another part, where it is even more difficult to deal with, or transfers the worst effects from the structure to the plant, which is a far more serious matter. Heavy engine foundations undoubtedly tend to reduce the amount of mechanical vibration transmitted to the structure, and separation, if it were possible to make it complete, would undoubtedly still further reduce it. But complete separation has not yet been attained, and it is open to question whether the partial separation which at present is much in favour is of sufficient value to compensate for the want of tie in the lower parts of the structure which the use of separation in any form entails. At any rate, in some central stations where, instead of partial separation, an efficient tie has been constructed at the foundation level the effects of mechanical vibration, with the same kind of engines and a similar arrangement of plant, are not worse than in those buildings in which such partial separation has been adopted.

Many things which may be included in the generic term "elastic foundations" have been suggested and tried as a means of overcoming this troublesome factor, and although in isolated instances of a single small engine such devices have met with some measure of success, I believe that in no instance have they been effective in central stations, and that in every case where they have been adopted not only has no good effect been obtained, but other and more serious difficulties, such as damage to steam pipes and plant, have resulted from them. They have now accordingly been generally abandoned. Many years ago this subject was very carefully investigated and enquiries were made in to, I believe, eighteen cases in which various foundations of this kind had been tried. All were failures and have since been removed. The worst of this system of construction is that it is delusive, and for a year or two things frequently go on all right, and generally the mischief is not discovered until it has become serious and something happens. In connexion with marine work the subject has also been most carefully studied, and so far no arrangement of elastic or cushion foundation or fixing for engines has been discovered which is beneficial. The best results hitherto obtained, not only in the United Kingdom, but also in America and on the Continent, have been by using heavy foundations of great rigidity.

The unequal temperatures which exist in these buildings must not be disregarded and the structure as a whole and every part in relation to every other part must be free to move, somewhere. Some fixing, of course, is necessary, and where the members of the structure should be fixed and where they should be left free to move should receive careful attention. The combination of freedom with fixing presents many difficulties An admirable system was devised for the construction of the Crystal Palace which will well repay examination. Of course, it would be impossible to adopt exactly the same system in central stations, but the ingenuity of the jointing of that building is such that it cannot fail to suggest modifications which may assist in overcoming these difficulties in more modern types of construction. The individual members of the structure should be rigid in themselves, more particularly so in these buildings than is usually required. It is difficult to secure strength of structure in buildings which are badly balanced or unequally loaded, as central stations necessarily must be. Girders continuous over many points of support, or rigid connexions where separate girders abut, are to be avoided.

It is impossible in the time at our disposal to even enumerate many other points of importance which should be considered in the arrangement of the materials in order to ensure strength, but sufficient has been said to indicate the general lines that should be followed. Materials must be selected for durability as well as for strength, because it is difficult and expensive to either repair or even clean down these buildings, and the proceedings necessarily involve risk to the machinery. Maintenance must also be kept as low as possible. The important objects which these buildings are expected to serve can only be secured by avoiding possibility of risk of interruption of every kind, and, inasmuch as that of fire can be eliminated by the use of incombustible materials, no other kind should be used. The contents of the buildings are already practically incombustible, and therefore this point does not present any serious difficulty at present.

Architectural treatment forms rather a part of the three preceding points than a separate division, since it comprises the use of materials by reason of their fitness, the development of the construction as a means to a definite end, and extends to the arrangement of the whole building in the simplest and most convenient manner. It commences as soon as the engineer has settled in a general way what accommodation is to be provided for the machinery and plant, and he has given the architect a

general idea of what he proposes to do. If offices are required, this part of the building will naturally be designed by the architect, and, as you have seen in the views of the Carnaby-street Station, nothing is wanted beyond the usual and convenient arrangements met with in the offices of any other important company. It is as well to provide room for extension as the requirements of the staff increase, as the undertaking developes. The arrangement of rooms and the comfort of the engineering staff, the ventilation and hygienic arrangements of the buildings, are the province of the architect. Ventilation and light must be considered together, and every part of the building must not only have free circulation of air but daylight must pervade every part. Artificial light can never compensate for the absence of daylight, and mechanics' work, which may be wanted at any time, or in any part of a central station, is more quickly and better done by daylight than at any other time.

And last, but by no means least, it rests with the architect to make the most of those points of the building which can legitimately be accentuated to produce architectural effect. He can arrange the masses of the building in good proportion and can make the most of the characteristic features of the various materials which it is necessary to use, in order to obtain a pleasing effect and, by utilising the features of the construction to the best advantage, can give these buildings such severity and dignity as their magnitude demands and without which they can only be masses of building which will disfigure instead of improve any neighbourhood in which they may be erected.

I have endeavoured to place the points before you rather in the form of notes capable of general application, than to attempt the elucidation of the minor details of the subject, in order that the application may be wide, and therefore more useful to the greater number. It is probable that opinions will differ upon many of the points on which I have touched, but every point has been carefully considered, and in every case I have endeavoured to give you the results, not only of my own experience but that of others.

I am confident that electricity has a future before it, not perhaps as great as that which steam had, but still a great future; and that gradually the buildings connected with it will be more important and of much greater general interest than they are at present. I trust that some of the points that I have mentioned may assist in solving some of the difficulties which are certain to arise in buildings for new purposes called for as scientific research gives rise to new industries, and if this should be so, the time which we have spent in considering central stations to-night will not have been wasted.

THE BUILDING TRADES' GIFT TO THE NATION:

HOMES FOR DISCHARGED SOLDIERS.

THE Executive of the Building Trades' Gift have much pleasure in announcing that in response to the unanimous request of the stewards, Messrs. George Trollope & Sons have very kindly consented to act as the builders of the Homes of Rest for Discharged Soldiers, to be erected at Bisley.

The Executive also announce that, thanks to the generosity of the Right Hon. Lord Pirbright, P.C., the site for the Homes has been extended by an additional two acres, with the result that the property is now well rounded off, and the buildings can be grouped in a very satisfactory manner.

Mr. Edwin O. Sachs, as chairman, is further able to announce that the result of the first six weeks' work on this scheme as ending March 1 has been a collection of gifts in kind to the value of 12,500*l.* (taken at trade prices), and a monetary collection of over 1,000*l.*, making 13,500*l.* in all. To complete the scheme, another 5,000*l.* in *cash* is urgently required, as well as gifts in kind to the value of 6,000*l.* Considerable quantities of timber, joinery, lime, cement, and facing bricks are still required, but particularly *timber*, the firms connected with the timber trade being conspicuous by their absence on the lists of donors.

Regarding such materials as stock bricks, glass roofing materials, paint, &c., in respect to which the entire quantity required has been presented by individual donors, Mr. Sachs wishes to call the attention of the special trades concerned to the fact that the generosity of single representatives should not prevent the remaining firms in that trade from contributing cheques to meet the cost of labour in putting these materials together. The brickmakers in particular are reminded that although Messrs. Eastwood & Co. have given the material (750,000 bricks), there is no reason why the other brickmakers should not help in paying for the bricklaying.

Mr. T. F. Rider, the Hon. Secretary, presents the following list of additional contributions, and calls special attention to the assistance the workmen are giving in spite of the inclement weather which has of late been considerably hindering their work and earnings.

Contributions in Kind.

Messrs. J. Tylor & Sons.—Sanitary Equipment for the Recreation House.
The Crittal Manufacturing Company (Braintree).—The entire Metal Casements for a Pair of Homes.
Messrs. Walter Macfarlane & Co. (Glasgow).—Rainwater Pipes, Gutters, &c., for One Home.
Messrs. Greaves, Bull, & Lakin.—Selenitic Lime for Six Homes and Service Block.
Messrs. Croggan & Co.—Three 450-gallon Cisterns.
The Albion Clay Company.—The Intercepting Traps, Gullies, &c.
Messrs. Wm. Oliver & Sons.—The Wood for 2,500 ft. super. of Cupboard Fronting.
Messrs. David Rowell & Co.—750 ft. of Iron Railings.
Messrs. Rownson, Drew, & Co.—Two 54-in. Double Ranges.
Messrs. W. N. Froy & Sons.—Twelve Chimney-pieces.
The Fireproof Partition Syndicate, Limited.—200-yds. "Cunnah-Wright" Partition.
Messrs. Jacobs Brothers & Co.—50-tons Portland Cement.

Additional Subscriptions.

	£	s.	d.
Mr. Charles Wall (Chelsea)	25	0	0
Workmen of Mr. Charles Wall	11	4	6
Messrs. De Grelle, Houdret, & Co.	10	10	0
Workmen of Messrs. Ashby & Horner	5	12	9
Messrs. Colledge & Bridgen (Wolverhampton)	5	5	0
Workmen of Messrs. De Grelle, Houdret, & Co.	4	12	6
Workmen of Messrs. J. M. Macey & Sons	4	10	0
Messrs. Ashby & Horner	4	7	3
Workmen of Mr. Benjamin Wells	3	18	0
Workmen of Messrs. Nicholls & Clarke	3	10	0
The Workmen and Staff of the Sub-Wealdon Gypsum Company	3	2	3
Workmen of Messrs. Taylor & Son	2	17	6
Builders' Collection at Wolverley (per Mr. Henry Smith)	2	2	0
Mr. Benjamin Wells	2	2	0
Workmen of Messrs. Edward Harris & Sons	1	15	0
Workmen of Mr. J. J. Quirke	1	10	0
Workmen of Messrs. Woodward & Co.	1	6	3
Workmen of Messrs. Humphreys, Limited (second donation)	1	5	6
Workmen of Mr. W. E. Hill	1	4	6
Workmen of Messrs. Barnes & Co.	1	1	0
Bridgwater Master Builders' Association	1	1	0
Workmen of Mr. Walter Ford	1	1	0
Workmen of Messrs. Rider & Son (per Mr. R. George)		10	6

BRITISH FIRE PREVENTION COMMITTEE.

THE future arrangements of the British Fire Prevention Committee in respect to fire tests include further tests with floors constructed under the minimum requirements of the London Building Act. There will, further, be a number of Reports on the various forms of patented or specially-made partitions, the following being the names of firms who have either applied for tests or whose partitions are already under investigation:—

The London Non-Flammable Wood Company, Limited.—Match-boarded partitions of non-flammable wood.
The Gypsine Brick Company.—Partitions of gypsine bricks.
The Mural and Decorations Syndicate, Limited.—Partition of special lathing.
The Fireproof Partition Syndicate, Limited.—"Cunnah-Wright" partition.
Messrs. J. A. King & Co.—Mack's partition.
Messrs. D. Anderson & Co., Limited, and Messrs. Broadbent & Co., Limited (jointly).—Studd partitions filled in with slag wool.

The testing operations, which had to be somewhat retarded owing to the inclement weather, will be resumed in the middle of March, the tests being held, as before, approximately fortnightly, on Wednesday afternoons until the middle of July.

LONDON MASTER BUILDERS' ASSOCIATION.

THE twenty-eighth annual general meeting of this Association was held at St. Martin's Town-hall, Charing Cross, on the 27th ult., for the purpose of receiving the Report of the Council, the statement of accounts, the election of President, &c. The chair was occupied by Mr. Thomas Gregory, President.

The Council, in their annual Report, stated that although the building trade has, for the past year, maintained its phenomenal briskness, there are not wanting indications of a reaction. The past year had witnessed one of the most stubborn labour struggles of the past decade. The lock-out of society plasterers commenced on March 6, 1899, and lasted over fifteen weeks. During the dispute many council, committee, and sub-committee meetings were held; deputations waited upon H.M.'s Office of Works, the Royal Institute of British Architects, and the Surveyors' Institution; delegates attended meetings held in Bromley, Croydon, Wimbledon, Wandsworth, and other places; district committees were formed; frequent conferences were held with various branches of the trade. Some hundreds of plasterers were brought over from the Continent to meet the requirements of the trade. After negotiations between representatives of the Council of the National Association of Master Builders and the Executive of the National Association of Operative Plasterers, an agreement was come to and was signed on May 30, 1899. This agreement, however, has proved of little or no use, as the society plasterers persistently refuse to work for builders who employ non-society plasterers, and the "black-listing" of firms still continues in the N.A.O.P. monthly reports. The funds of the Association had not yet recovered from the large and necessary expenditure incidental to the lock-out, but every effort must be made to place them on a satisfactory footing. The Council were anxious to place on record their high appreciation of the eminent services of Mr. Benjamin I. Greenwood, Past-President, during the lock-out. Disputes had constantly arisen in respect to demarcation of work between bricklayers and plasterers, *re* floor and wall-tiling; between bricklayers and plasterers, *re* fixing block partitions; between bricklayers and tilers, *re* roof tiling; between bricklayers and pointers; between joiners and cabinet makers. These differences seriously affect the trade, and the Council had endeavoured to bring about a mutual understanding between the contesting parties. A special general meeting was held in St. Martin's Town Hall, on December 14 last, when applications were read for advances in wages and alterations in the working rules from the carpenters and joiners, the plasterers, and the labourers. These applications are receiving the close attention of the Council, who, acting upon the resolution passed at the above special general meeting, are endeavouring to secure an effective and binding conciliation rule as an essential preliminary to the consideration of any further agreement. It is intended to remove the headquarters of the National Association of Master Builders from Liverpool to London. During the past year the Association has been affiliated to the South-Eastern Counties' Federation. The Council would point out that London, being the largest, best organised, and by far the most important centre, is expected to take an active interest in perfecting the scheme of federation. Bearing upon this matter, the Council wish to emphasise the fact, that, during the lock-out, their deputations to the architects and surveyors were received in a friendly manner, and sympathy was expressed by the members of those professions for the builders. Firm and practical cohesion amongst employers was more necessary than ever, and the Council would urge the members to be willing to make sacrifices of time, energy, and money to protect their trade and personal interests. The question of apprentices was a matter of serious importance to the trade, and is receiving the attention of the Council. The Council draw the attention of members to the important case of Crowshaw *versus* Pritchard and Renwick, where Mr. Justice Bigham held that an estimate when accepted becomes a binding contract upon the builder. The Council are glad to report that a considerable addition has been made to the list of members. The Council gratefully acknowledge their obligation to the members of the

various committees, and they record their appreciation of the services of the secretary, Mr. T. Costigan, during the past most trying year, when his energy, tact, and capacity for work have proved invaluable.

The Report and balance-sheet having been read and adopted, the following officers were elected: — As President, Mr. Charles Wall, Chelsea; Senior Vice-President, Mr. W. F. King (Wm. King & Son); Junior Vice-President, Mr. G. J. Lough (Stimpson & Son, West Bromwich); treasurer, Mr. E. J. Brown (Brown, Son, & Blomfield); and auditor, Mr. H. S. Foster.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE ninth meeting of the session was held at 56, Great Marlborough-street, W., on Friday, March 2nd, Mr. W. B. Hopkins in the chair, when Mr. J. Humphrey Jones, B.A., read a paper entitled "The Question of the Model By-Laws." In commencing his paper Mr. Jones dealt with the origin and necessity of building by-laws, and the nature and modifications of the Model code sanctioned by the Local Government Board, and also the way by-laws have been administered in the past, with their effect upon building generally. Mr. Jones considered that the country had generally benefited by the observance of by-laws with regard to airiness, wholesomeness, and security from fire, but owing to the rules not being elastic they had greatly favoured, in the smaller type of house, a very stiff and extremely ugly form of building. As a remedy against this it was suggested that the Local Government Board should be more careful to grant only such powers as were really required, as has been suggested by the Committee of the Royal Institute of British Architects, who have considered the subject lately. The principal model by-laws were considered in detail, and Mr. Jones described the suggested amendments to them, supporting generally those adopted by the Royal Institute of British Architects' committee.

The discussion was opened by Mr. C. H. Brodie, who strongly supported the ideas of the Institute committee, especially the proposal to divide the by-laws into sections and adapt the sections to the needs of the district; and also the appointment of a Tribunal of Appeal, it being quite useless at the present time to appeal to the Local Government Board.

Mr. H. V. Crawfuth Smith considered that one great defect in by-laws was caused by their being drawn up by engineers who had no appreciation of architecture, and who, through lack of knowledge of design, caused considerable difficulties, such as the carrying of the party wall through the roof. One cause of the failure of by-laws, he considered, was due to the miserable pay and worse treatment which municipal surveyors and building inspectors received, and strongly advocated a right of appeal to the Local Government Board in the case of officials dismissed from office, as is allowed to the medical officer of Health.

Mr. G. H. Smith supported a suggestion of the last speaker that no external walls of dwelling-houses, unless covered externally with rough cast, cement, or tile hanging, should be of less thickness than 14 in. He also pointed out that the sanitary by-laws were not sufficiently up-to-date, and should be made to meet the needs of each town individually, showing that the sewer disconnecting-trap was not necessary where a modern system of sewers were laid with self-cleansing gradients.

The discussion was continued by Messrs. Carvill, Tayler, Dawson, and Satchell.

The Chairman, in summing up the discussion, considered that no building whatever should be exempted from the sanitary by-laws.

A vote of thanks was passed to Mr. Jones, who replied. The meeting then terminated.

BLACKBURN TOWN HALL SCHEME.—The Mayor (Mr. E. Hamer) presided at the recent quarterly meeting of the Blackburn Town Council. He moved the adoption of the Report of the General Purposes Committee, who recommended that a site be purchased at Blakey Moor for the erection of police and fire brigade headquarters, and that the existing Town Hall be extended by the addition of an assembly hall, thus permitting the housing of the corporate staff under one roof. On a division the motion was carried by a large majority.

SANITARY INSPECTORS' ASSOCIATION:

SEVENTEENTH ANNUAL DINNER.

ABOUT 120 members of this Association, including visitors, dined together on Saturday at the Holborn Restaurant, on the occasion of the seventeenth anniversary of the foundation of the Society. Sir H. Gilzean Reid, LL.D., the new President, was in the chair, and among the visitors on his right and left were Messrs. Percy Thornton, M.P.; Atherley Jones, Q.C., M.P.; C. H. Seeley, M.P. for Lincoln; Venerable Archdeacon Sinclair; Rev. J. W. Horsley; the Master of the Carpenters' Company; Dr. Shirley Murphy; H. Lovegrove; O. Chadwick, C.E., &c.

In the after-dinner proceedings, the toast of "The Queen" having been honoured, the Rev. J. W. Horsley proposed the Houses of Parliament. He referred to the active and earnest interest taken by the Prince of Wales (following in the footsteps of his father, the late Prince Consort) in sanitary matters, and particularly in the great problem of the housing of the working classes, the important Boundary-street scheme of the London County Council having been opened by the heir-apparent that very afternoon. The Prince had shown great practical acquaintance with the difficulties in the way of carrying out sanitary schemes, which, even when promoted by Parliament and by Royal Commissions, and after much evidence had been taken and much talk had been expended, too often ended in no action being taken. With the toast he coupled the names of Mr. Percy Thornton and Mr. Atherley Jones, Q.C., two members of the House of Commons who had proved their sympathy with the members of that Association in one of the most effective ways in which legislators could help the progress of sanitation.

Mr. Percy Thornton, M.P., said he was glad to associate himself with the work of that Association, which was promoting a Bill in Parliament by which they hoped to obtain the same amount of security of tenure of their offices that prevailed in the case of sanitary inspectors in Scotland.

Mr. Atherley Jones said he was no less anxious than his honourable friend to see the House of Commons devoting more time to the consideration of municipal problems. More importance should be attached to sanitary measures. The whole time of the House should not be monopolised by Government, but more attention ought to be given to measures such as that promoted by the Association.

The President having proposed "The Defenders of the Empire," to which Mr. C. H. Seeley, M.P., responded, the toast of the evening, "The Sanitary Inspectors' Association," to which was appended "Local Government," was proposed by Archdeacon Sinclair, Mr. W. H. Grigg, the Chairman of the Council of the Association, being called upon to respond to the toast. The Archdeacon said he was of opinion that sanitary legislation was more important than any other. Sanitary inspectors were undoubtedly entitled to security of tenure in their offices. They should not hold them in subordination to local authorities, but should hold them from the Local Government Board.

Mr. W. H. Grigg, after thanking the venerable Archdeacon for his compliment to the Association, said it was well known that in nearly all cases sanitary inspectors were subject to be dismissed without reason being given, and he could, if time permitted, tell them of some flagrant cases. In 1895, Sir Walter Foster, then President of the Local Government Board, said they were entitled to security of tenure. The London County Council had endeavoured to put the sanitary inspector into a better position, but the Council found they had no power, and now the Association knew they must do it themselves. Mr. Percy Thornton might rely upon the members of that Association being grateful, and so might the backers of their Bill, who belonged to all sections of politics. The Bill was introduced on February 23, and the second reading had been set down for last Tuesday, but there had not been time to print it. There were three classes of opponents of the Bill: (1) those who could not give the time or attention necessary to understand the measure; (2) those who felt it a duty to oppose any measure introduced from the opposite side of the House; and (3) those opposed to the Bill on reasonable grounds, which they must respect. What sanitary inspectors wanted was protection from the authorities in the execution of their duties. The question was one which affected the public health, and was not a question merely for sanitary inspectors. Unless they could get protection, the duties that were set down for them by law could not properly be performed and would not be performed. He knew a local authority, nine of the members of which had been convicted on the reports of their own inspectors. Before concluding, Mr. Grigg said all would be pleased to learn that some recognition was to be given to one of their retired officers, Mr. T. J. Moss-Flower, C.E., who had rendered to the Association splendid services. All must have been impressed with the fact that he had laid the Association under the greatest obligations by the way in which he had presided over the conference at Lincoln last year, and all must be glad that it had been decided to give him some small testimonial to indicate how much they felt under many obligations to their late Chairman of Council.

The President then presented to Mr. Moss-Flower an illuminated address acknowledging his unsparing efforts to advance the interests of the Association during his presidency in 1898-99. In making the presentation, the President mentioned the inception of a provident fund as among the benefits conferred by the late chairman, who though he had to travel from Bristol for the purpose, had scarcely ever been absent from any meeting at which it had been his duty to preside.

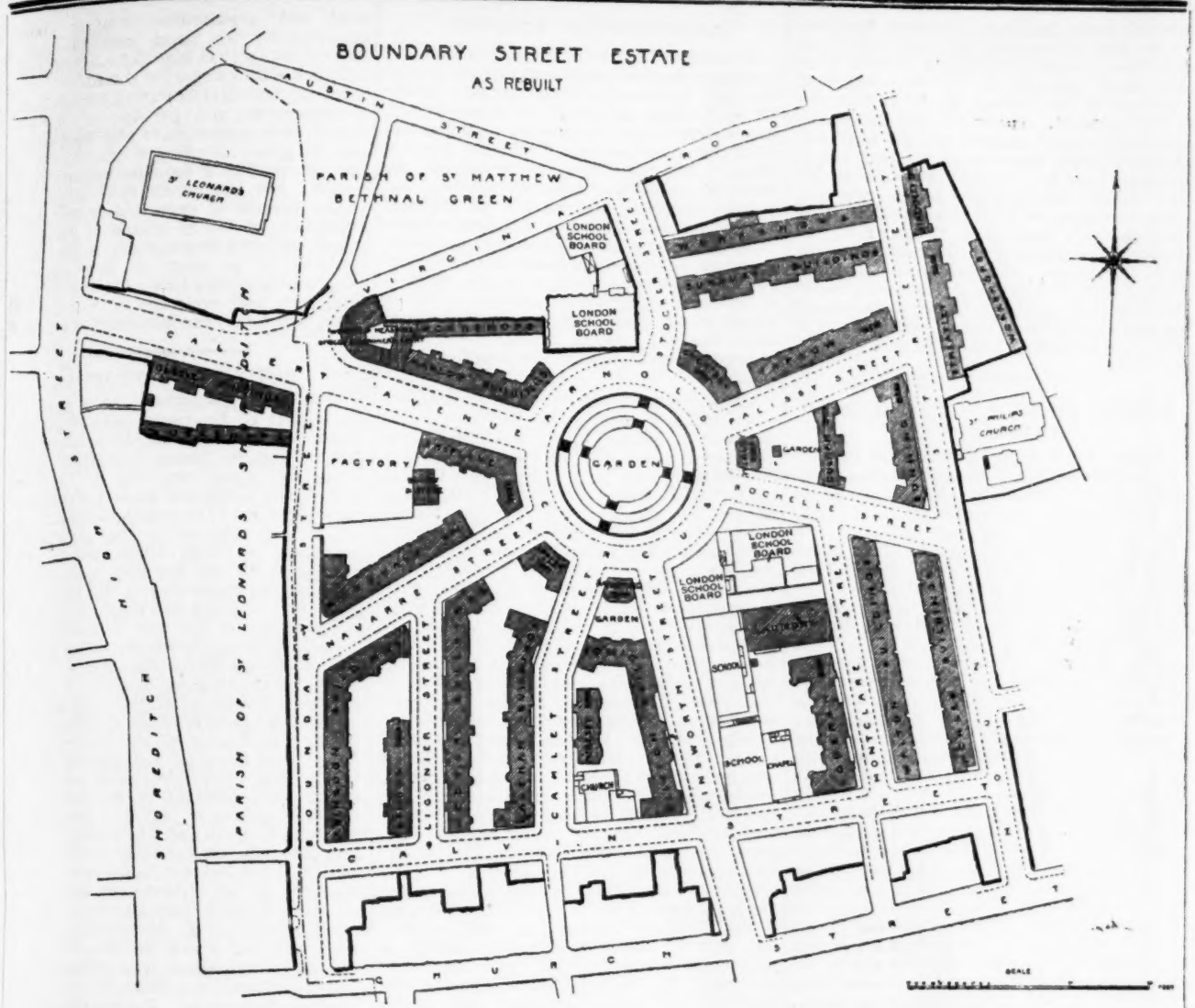
Mr. Moss-Flower having suitably acknowledged the compliment, the Hon. Sec., Mr. E. Tidman, C.E., proposed the toast of "The President," which was enthusiastically honoured. Sir Hugh Gilzean Reid having responded, the toast of "The Visitors" was drunk, Mr. Mansfield Robinson and Mr. H. Lovegrove responding.

The last toast "The Press" was proposed by Mr. Aubrey Richardson, and having been duly honoured and acknowledged, the proceedings closed.

BOUNDARY-STREET BUILDINGS, BETHNAL GREEN.

HIS ROYAL HIGHNESS THE PRINCE OF WALES opened last Saturday the buildings on the Boundary-street area, Bethnal Green, which have been erected by the County Council for the working classes. The area lies to the east of High-street, Shoreditch, and north of the Bethnal Green-road, and is about fifteen acres in extent. It is square in shape, and is bounded on the north by Virginia-road, on the east by Mount-street, on the south by Old Nichol-street (since re-named Calvin-street), and on the west by Boundary-street. The whole of the site at one time formed part of the garden of the nunnery of St. John the Baptist, Holywell.

In an interesting description of the undertaking issued by the County Council, it is stated that upon the maps of London of two hundred years ago we still find the area unbuilt upon, but, between that time and the beginning of the present century, the land has begun to be covered with buildings. It is about this time that Old Nichol-street makes its appearance followed almost immediately by the streets parallel to it—New Nichol-street, Half Nichol-street, Vincent-street, and Mead-street. These latter streets are said to have been constructed about the time of Nelson's great victories, and to have been named after his admirals. That certainly seems probable; but, at any rate, the great majority of the houses and streets upon the area appear to have been constructed at or about that time. The houses, therefore, were, at the time of their demolition in 1893-5, somewhat less than a century old. Besides the streets already mentioned, however, there existed all over the area, but more especially off Old Nichol-street, which, together with its parallel streets up to Mead-street, was known as "the Nichol," small courts, entered under the houses and built generally over what had been the gardens or yards of the original houses. Whatever might have been the original character of the occupiers of these narrow streets and courts, there is no doubt that by the eighties "the Nichol" had become one of the worst areas in the East of London, both by reason of the character of the houses and of their occupants. The area, which comprised a population of some 5,700 souls, formed the nucleus of the ecclesiastical parish of Holy Trinity. This parish held



a total population of about 8,000 persons, and was endowed to the extent of 200*l.* a year. No church, however, existed, and what services were held took place in a long room over a stable in Old Nichol-street. In Old Nichol-street alone there dwelt at one time no fewer than sixty-four ticket-of-leave men. As to the condition of the wretched hovels which did duty for houses in this locality, in the building of these, speaking generally, no mortar was used, but in lieu thereof, a curious substance known as "billy-sweet."

"It is one of the properties of this substance that it never dries. Add to this that the houses were, in the majority of instances, so constructed that their ground floors were from 12 in. to 18 in. below the street level; that the widest street was barely 28 ft. across; that no house possessed such a thing as a front door; that no repairs were ever done to the houses; that what back yards had ever existed had nearly all been roofed in and occupied as further houses—and you may have a bare idea of the state of things which caused the death-rate in this particular neighbourhood to mount up to over 40 per 1,000 in 1889, a rate nearly twice as great as that in the parish of Bethnal Green, and the practical meaning of which is, that, out of every twenty-five living persons on the area, one at least was sure of death within the year."

It was this state of things that the Council decided in 1890 to step in and remedy by an exercise of its powers under the Housing Act, then just passed. The Council, in November of that year, formulated a comprehensive scheme for the demolition and rebuilding of the whole congeries of courts and alleys. Shortly, the scheme, which was commenced towards the end of 1891, was to demolish the old houses bit by bit; to form wide new streets on the area, upon an entirely new principle, and to construct new blocks of flats for the re-accommodation of as many persons as was consistent with a due regard to health and sanitation. The net cost of acquiring and clearing away all the old insanitary houses, and constructing the new streets, paving them with asphalte, will probably amount to 270,030*l.*

"During the time necessarily occupied in purchasing the area and pulling down the old houses, the Council conceived the novel laying-out plan which has since been carried into effect. According to this plan, the area is approached by an avenue 60 ft. wide, leading direct from Shoreditch High-street to a central open space. Streets, 50 ft. wide, planted with trees, radiate from this centre to the limits of the area, and these are also connected with the streets bounding the area by branch streets 40 ft. wide. The four streets bounding the area have been widened to 40 ft., and, in passing, it may be noted that during these widening operations a well, supposed to be one of the holy wells of the ancient monastery, was discovered in Old Nichol-street. The cost of forming, paving, and sewering these streets amounted to nearly 50,000*l.* . . . Upon the building sites formed by these streets blocks of dwellings have been so arranged that the living room of every tenement receives the benefit of sunlight at some time during the day. In all, twenty-three blocks of dwellings have been erected. Of these, twenty-one are from designs prepared by the Council's staff under the direction of Mr. T. Blashill, the late Superintending Architect to the Council, and approved by the Housing Committee, and the remaining two are from designs prepared by Mr. Rowland Plumbe. These provide accommodation for 5,380 persons in fifteen flats of one room, 533 of two rooms, 388 of three rooms, 98 of four rooms, 7 of five rooms, and 3 of six rooms. There are thus 925 tenements now in lieu of the 730 houses formerly existing on the area. The cost of the buildings amounts to nearly 270,000*l.*, in addition to the cost of purchasing the properties and the value of the land amounting to about 333,000*l.* The figures include the provision of cottage dwellings for some 144 persons at Goldsmith-row, a little distance from the actual area, built in order to afford house-room for some of those displaced while the other new dwellings were being erected. Besides the actual dwellings, the estate comprises a central laundry fitted with all the latest mechanical conveniences for washing and drying clothes, the idea of this building being to obviate the unpleasant dampness which so often results from such operations being carried on in large blocks of dwellings. The laundry building also contains baths and two good-sized club-rooms, which latter are available for the use of the tenants of the estate for social meetings, concerts, &c. Baths fitted with hot and cold supply of water are also provided in one of the blocks of dwellings. Between the various blocks of buildings are provided large paved yards, which form playgrounds for the children, and one of these is laid out as an ornamental garden. The central open space is circular in shape, and is formed in terraces and provided with seats, shrubs being planted on its slopes. From this open space a pleasing view of well-proportioned buildings and open courtyards can be obtained in all directions. Seventy-seven workshops and eighteen shops have also been built, the former for the use of the occupants of the buildings, the latter including all buildings necessary for a baker's establishment. In order that the estate may be completely managed, and repairs immediately necessary looked to on the spot, a central workshop is also provided, fitted for the execution of all such works. The buildings have been named in a series, after the various towns to be met with in a journey up the Thames, so that there are, on the north-eastern portion of the area, Streatley, Sunbury, Chertsey, Taplow, Hurley, Culham, and Sonning Buildings; on the south-eastern portion, Henley, Walton, Cookham, Sandford, Molesey, and Clifton Buildings; on the south-western portion, Iffley, Hedsor, Laleham, Benson, and Abingdon Buildings; and on the north-western portion, Wargrave, Shiplake, Marlow, and Cleeve Buildings. In this scheme, as in others promoted by the Council, the aim has been that the dwellings, while let at rents not exceeding those ruling in the neighbourhood, shall be so designed as to be self-supporting. That is to say, that the rents, fixed on that basis, shall be sufficient to pay all outgoings, including interest on the capital expended on land (at its value for housing purposes) and buildings, and the provision of a sinking fund for the repayment of such capital within a period of sixty years."

The Falcon Brass Works, Limited, of Blackfriars, supplied their "flood" pattern siphon waste-preventing cisterns (some hundreds in number) to the dwellings.

In the clearance only of insanitary areas the Council is spending 1,114,800*l.* For this sum thirty-five acres of old, dilapidated, and insanitary dwellings will be demolished, and 16,160 persons will be displaced; 1,908 tenements, affording accommodation for 10,060 persons, are already completed and occupied. These buildings, including the value of the land, have cost a sum of 609,438*l.*; 1,190 tenements, affording accommodation for 5,900 persons, are in course of construction, and the

cost of these buildings, including the value of the land for housing purposes, will be not less than 327,040*l*. In addition to these, plans are being prepared by the Superintending Architect of the Council, Mr. W. E. Riley, for 3,718 tenements. These will afford accommodation for 19,990 persons, and the total cost, again including the value of the land, is estimated at 1,008,799*l*. It will thus be seen that the Council has provided and is providing accommodation in 6,816 tenements for 35,950 persons, at a total outlay of 1,945,277*l*. Of these, 145 tenements will contain one room, 3,271 two rooms, 3,160 three rooms, 229 four rooms, eight five rooms, and three six rooms. Further, 5,251 persons will be accommodated on areas about to be cleared, but the cost of this work has not yet been estimated.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.

A MONTHLY meeting of the British Institute of Certified Carpenters was held at Carpenters' Hall, London Wall, on the 3rd inst., Professor T. Roger Smith, President, in the chair. After the business of the meeting had been considered, a paper by Mr. Henry Adams, Hon. Fellow of the Institute, was read in his absence, through illness, by Mr. Herbert Young, entitled "Some Comparisons of Graphic Statics Applied to Roofs." Four methods were demonstrated on the blackboard, first by triangle and parallelogram of forces; second, by stress diagrams; third, by application of movements and principles of levers; fourth, by dividing framing into sections. All four methods were arranged in a graduated system, so as to show the principles of obtaining the stress in framed roof trusses. Each method was worked out by Mr. Herbert Young.

Mr. Jas. Clark (Tunbridge Wells), Vice-President, in proposing a vote of thanks to Mr. Adams, said that, in addition to the subject being such a very interesting one, the examples worked out had been well chosen, and would enable those desirous of studying the subject to work out examples and compare the relative advantages of each method. He thought the second method the most suitable for wooden structures; and, having obtained the various stresses, they would be surprised at the smallness of scantlings arrived at even after a careful study, but these were considerably augmented to form suitable joints, and by reason of the varying texture of timber. The result of the stress diagrams also showed where the most stress was to be found, and this enabled them to design their structures satisfactorily.

Another member supported the proposition, remarking that it was becoming essential to know something of graphic statics to pass various examinations.

Professor T. Roger Smith, in supporting the vote of thanks to Mr. Adams, said the subject was one of extreme importance to architects in the construction of roofs and domes. Architects had to consider carefully where the strain would come, what strain would be given, so as to get the most substantial form and sizes of timber to carry the structure; he had always found it a most difficult subject for students to grasp readily. He felt sure they would soon understand how to work out examples if they would give their attention to it. One point often neglected in the results obtained was stiffness, and this was a great essential, and must be allowed for.

Mr. S. Evans proposed a vote of thanks to Mr. Herbert Young for reading the paper and for his demonstrations, in the absence of Mr. Henry Adams.

Mr. Herbert Young, in reply, said he would advise any one to take a small simple problem first, and when it was mastered to go on with another, and so on.

A vote of thanks having been given to the President, the Secretary announced that at the next meeting, April 7, Mr. F. Sucett will read a paper on "Air-Tight Case Making."

CHAPEL, ST. PETER'S HOME, MAYBURY, SURREY.—The permanent chapel of St. Peter's Home, Maybury, is now approaching completion. Externally, the building is of red bricks, with Bath stone dressings, the roof being covered with red tiles. The chapel was designed by the late Mr. J. L. Pearson, and the work has been carried on since his death under the supervision of Mr. F. L. Pearson. Messrs. Luscombe & Son, of Exeter, are the contractors, the marble work being carried out by Mr. R. Davison, of London. The cost will be about 17,000*l*.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL SOCIETY.—A meeting of the Edinburgh Architectural Society was held in Dowell's Rooms recently, where Mr. John Begg, A.R.I.B.A., of Johannesburg, gave a lecture upon "Johannesburg Before and After the War, from an Architect's Point of View." Mr. Begg said that practically the whole of the building was "speculative," and that the materials used were of the cheapest possible variety. This state of matters was due to the political unrest of the country and to the heavy cost of labour and materials. This jerry-building was also encouraged by the mildness of the climate. With the country under a rule which would command more public confidence than the present, Mr. Begg had hopes of great improvement in the architecture of the country.

ARCHITECTURAL ASSOCIATION OF IRELAND.—An ordinary meeting of this Association was held in the Grosvenor Hotel, Dublin, on Tuesday evening, the 6th inst. Mr. George Sheridan, President, in the chair. Mr. Thomas Drew, R.H.A., read a paper on "The Comacine Masters in Ireland," illustrated by lantern slides. Mr. Drew said that very many pedantic theories were being dissolved by modern travel and the improvement of photography. They were now only beginning to realise what globe-trotters their early ancestors were. People believed, in these days of tourists' guide-books and excursions, that those who lived in the early ages did not travel; but the contrary was the case. Though progress was slow, it was none the less continual. Soldiers of fortune, crusaders, clerics, and as they now knew, builders passed from land to land; and the language of mediæval Europe was more of an approach to universality than the language of our own more educated day. He referred to the influence which the migratory associated bands of master builders exercised on architecture in explanation of the Comacine symbolism. Dealing with early Church architecture in Ireland, he expressed the opinion that it had its origin in the teaching of the Comacine masters. A noble architecture had its birth, its rude and masculine beginning, around Como first; and then developed the strange symbolic and mystic sculpture of the Comacines that might be traced in all lands—in Sicily, Southern and Western France, and to England and remoter Ireland. The stone now in the restored Chapel of St. Laurence O'Toole, Christ Church, Dublin, was forty years ago, in his memory, in the old choir now removed, and it was carefully protected with glass with traditional respect. Around and near it was the genuine and surviving work of the master builder. In reading the inscription on the stone he had the assistance of his friend, Mr. Richard Langrishe, who had a gift of intuitive comprehension of cryptic inscriptions that would fit him for the high office known as "Blind Clerk" in the General Post Office. He would not say that their reading was perfect as yet, and that more expert scholars in Norman-French might not correct some details. But he thought they had the main sense of it. It was very evident that it consisted of two records by different hands, and telling some of its story. The first three lines were the record of the master builder, John, cut either in his life time or at his decease. The workmanlike mason required a stone on his bench and set on that his lines, and cut clearly and well the inscription, which they would read thus:—"John, the Master Builder (Lombard), son of Raymond of Parma, and Dame Rame Perez of Saint Salvador of Asturias." Then came the last two straggling lines, an illiterate cutting by another hand. It seemed to his imagination to have some pathetic story. He read it as, "His wife and all his family, who died in this land, lie here." This record of a Comacine Master Architect Freemason in Ireland in the twelfth century was, he believed, unique in England, Ireland, and Scotland. He knew of but one similar, much accounted of by modern Scotch Freemasons, on two stones at Melrose Abbey. Yet it was admittedly no older than the sixteenth century, and was a posthumous one, as was internally evident. Their Dublin inscription, 400 years older, was more satisfactory. He pointed out that "John, Master Builder, from Asturias," had built additions to Christ Church, as it had been originally built by Sitric, the Danish King. Christ Church still remained a standing monument—more a miraculous survival and resurrection from a Church, described by Mr. Street, when he found it thirty years ago, "so degraded as almost to have fallen out of the category of Cathedrals." They could only marvel at the survival through its days of desecration, and, perhaps, of indifferent neglect of its great store of archæological interest, its great collection of manuscripts, and genuine remains of beautiful mediæval architecture. Not least could they marvel at the almost miracle of endurance of this ancient inscription, so full of interest in the obscure past of mediæval Freemasonry, and in the preservation of so much of now significant sculpture—sculpture they could now see of the symbolism and mysticism of the Comacine Guild, which they carried with them to alllands.

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday evening, Mr. Henry O'Connor, President, in the chair, a paper was read on "The Closing of Breaches in Sea and River Embankments," by Mr. Richard F. Grantham, M.Inst.C.E. The author first referred to the great tide of November 29, 1897, which did so much damage to the sea and river walls and property on the coasts and on the banks of the tidal rivers of Essex and Kent. The causes of the great rise of tide and of the breaches in the walls were ascribed to the violent gales and sudden change in the direction of the wind and to the cracks along the tops of the walls and their insufficient height. The methods of stopping the great breaches at Dagenham and Middle Level were briefly referred to. The author then observed that Brading Harbour, in the Isle of Wight, about 600 acres in extent, was reclaimed in the year 1622 by Sir Hugh Middleton, but in a short time the tide again broke in and overflowed the harbour until 1880, when it was again shut out. Great difficulties and frequent failures were met with in closing the sea embankment, the tide breaking down the piling time after time. The first line of piling across the opening had to be abandoned, and a new line in rear of the old one was formed which was ultimately closed. The embankment now forms the road from St. Helens to Bembridge. Three serious breaches caused by the great tide of November, 1897, came under the author's notice in the river walls of Northey Island in the Blackwater below Maldon, Essex; in those of the Cold Harbour and Ridham Marshes in the Swale, in the parish of Iwade, Kent; and in those in the River Crouch in the parish of Stow Maries, Essex. The lands overflowed were grass marshes, and were of no other value than that which they possessed as agricultural land. It was, therefore, of the greatest importance that the cost of closing the breaches should be very moderate and well below the value of the land, which of late years has been so much reduced. The author considered that instead of attempting to pile across the breaches, the cheaper plan, and one with the least risk, would be to form an inset or horse-shoe wall round the breach. The tide was shut out of Northey Island in this way in four months without serious difficulty. In a similar way the tide was shut out from Cold Harbour and Ridham Marshes, but serious difficulties and failures occurred before the wall was finally and permanently closed. The details of these works were described. In conclusion, the author summarised the various methods of closing serious breaches in river walls, and quoted the principles laid down by Captain Perry and the late Mr. C. B. Vignoles. He suggested that in the case of land having only an agricultural value, where the area was not too large, the inset wall is the cheapest, and is attended with the least risk. The paper was illustrated by maps and diagrams, limelight illustrations being also introduced.

THE INSTITUTION OF JUNIOR ENGINEERS.—Last Saturday, March 3, a large number of members visited Messrs. Maudslay, Sons, & Field's Belleville Boiler Works at East Greenwich. They saw all the machinery for the preparation of the different parts forming the elements; the method of erection was explained, and the special features of construction pointed out. The Cowper-Coles apparatus for galvanising the tubes, &c., was also seen, and the system of working it described. At the conclusion of the inspection, the Vice-Chairman (Mr. E. A. Berry) expressed the acknowledgments of the Institution for the interesting visit which had been made.

ITALIAN HOSPITAL, QUEEN-SQUARE, LONDON.

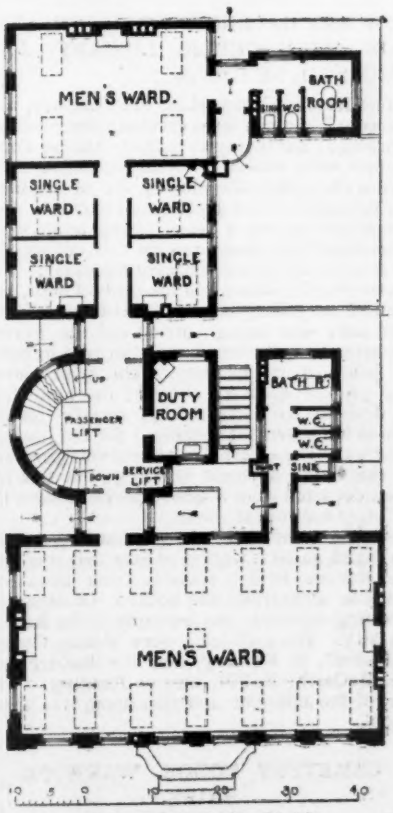
THE façade was designed to be executed in Portland stone and red brick. The dome which surmounts the semi-circular staircase in Devonshire-street is covered with lead.

The basement is devoted to the servants' department, kitchen, larders, store rooms, servants' hall, linen room, heating chamber, washhouse, post-mortem room, and a vaulted mortuary under the roadway. The ground floor consists of entrance-hall, board-room, secretary's, house surgeon's, and porter's rooms, operating-room, with accident ward adjoining, semi-circular staircase, with patients' lift in the centre. The out-patients' department is shut off from the hospital, and consists of waiting-room, with separate entrance and exit, physician's surgeon's, and registrar's rooms, dressing-room, and pharmacy. The first floor is devoted to male patients, and consists of a ward for fourteen patients, smaller ward for four, and four single wards for special cases, with two detached sanitary blocks, containing bath-room, lavatories, water-closet, and slop-sinks.

The staircase is detached from the wards by cross-ventilated lobbies. Opposite the staircase is the nurses' duty-room, fitted with hot closet, sink, cupboard, and flap-table, with food-lift outside.

The second floor is devoted to female patients, with a ward for eight, smaller ward for four, two single wards for special cases, children's ward, and an isolated ward, disconnected by a corridor open to the air. Sanitary blocks and duty-room, lifts, &c., the same as on the first floor.

The top floor is arranged for the nursing sisters, and contains dormitory, sitting, dining,



FIRST FLOOR PLAN.

Italian Hospital, Queen-square.

sick, work-rooms, and detached sanitary block. Two outside unenclosed lifts are provided to every floor for coals, dust, soiled linen, &c. One of the roofs is used as an airing ground for patients, with a covered shelter. The chapel is at the top of the staircase under the dome. The staircase and floors are fire-resisting throughout. The ward floors are of oak in narrow widths, grooved, and tongued and secret nailed and wax polished. The building is warmed throughout and lighted by electricity.

The work has been executed by Messrs. Holloway Bros., of Belvedere-road.

THOMAS W. CUTLER.

BOOKS RECEIVED.

ST. PAUL'S: THE CATHEDRAL AND SEE. By the Rev. Arthur Dimock. (Geo. Bell & Sons.)

LONDON BRIDGE AS IT IS AND AS IT MIGHT BE. By Ernest Runtz. (Ernest Runtz & Co., architects.)

HYDRAULIC POWER ENGINEERING. By G. Croydon Marks. (Crosby, Lockwood, & Sons.)

THE WESTMINSTER IMPROVEMENT SCHEME.—On the order (March 1) for the second reading of the Bill promoted by the London County Council, the First Commissioner of H.M.'s Works stated that, whilst the Government approved the general objects of the measure, he reserved the right to ask the House to reject the Bill at its third reading unless some important amendments are introduced into it, one of them being that the entire space between the Thames and the proposed widened road to the foot of Lambeth Bridge shall be laid out so as to form a continuation of the Victoria Tower Gardens. We gather that the Office of Works are prepared, at an annual cost of about 400*l.*, to maintain, as a public recreation ground, the whole space we describe.

Illustrations.

ROOF OF CHOIR, CHRIST CHURCH CATHEDRAL, OXFORD.

THIS drawing of the vault of the choir of Christ Church Cathedral, Oxford, is perhaps the finest of the excellent series of drawings by Mr. J. McLachlan which gained him the Pugin Studentship at the Institute of Architects this year. The drawing is not only a very effective one, but shows also a successful mastery of a very difficult piece of perspective.

The history and description of Christ Church Cathedral are given in the *Builder* series of "Cathedrals of England and Wales;" the illustrations and description of Christ Church will be found under date June 4, 1892.

DRAWINGS OF MEDIÆVAL WORK.

THE drawings on this sheet are also from Mr. McLachlan's Pugin competition drawings, of which one strainer is here reproduced on a reduced scale.

The drawings from the choir stalls of Chester Cathedral may give to some of our readers their first information as to the amount of fine carved woodwork which is to be found in a cathedral which, for reasons easy to understand, is a good deal neglected by architectural students and sketchers. Chester is a small and rather *tame* cathedral; externally it is now hardly anything but a modern restoration, and internally it is not very striking as a whole; a good deal of the architectural detail is somewhat feeble; but there are various points of special interest about it which render it worth more attention than it generally receives, and the carved woodwork is not only fine but for the most part in exceptionally good preservation.

The church at Ipplepen, of which a small sketch is given, Mr. McLachlan characterises as "one of the best of the simple roughcast churches of South Devon."

THE SMALLER FINE-ARTS PALACE AT THE PARIS EXHIBITION.

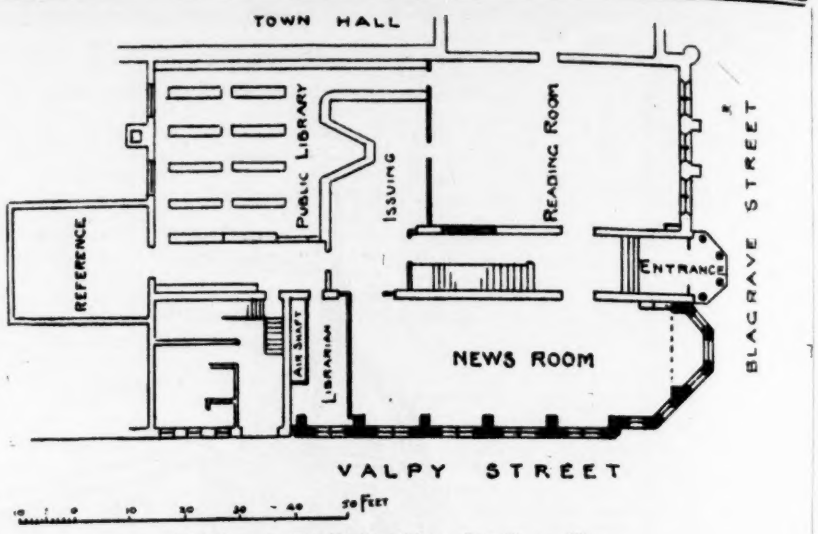
WE give here a reproduction of the two principal elevations of what is called the "Petit Palais des Beaux-Arts" at the Paris Exhibition, designed by M. Girault, and to which some reference is made in the "Letter from Paris" in another column of the present issue.

The drawing was one of those exhibited at the reading of Mr. Charles Lucas's paper at the Institute the other evening, and we have reproduced it just as it stood, but as to its real effect a word of explanation is necessary. The two elevations are on different scales, and in consequence of the inconvenient practice of the French architects of never placing a scale on their drawings, but only writing on them what the scale is, there is no possibility of giving the scale when the drawing has been reduced in photographing.

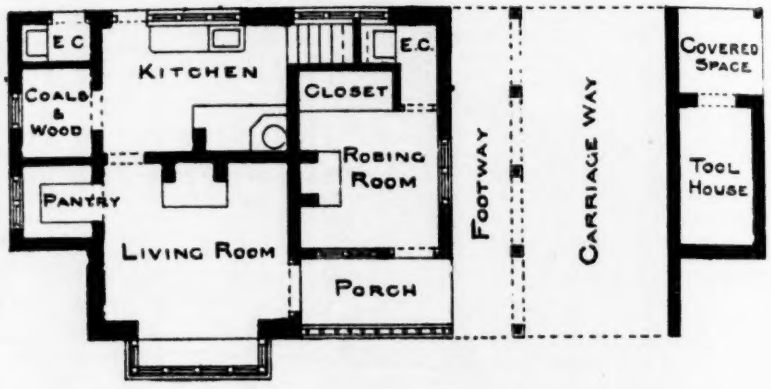
The explanation of the two elevations is this: the plan of the Petit Palais des Beaux-Arts is a quadrangle of which the west side is shorter than the east or principal side; the two remaining sides, which are symmetrical, consequently converging somewhat towards their junction with the two ends of the western façade. The upper elevation in our drawing is really the longest of the four, but is drawn to a smaller scale than the other. It represents the façade facing east, which flanks the new avenue (running north and south) leading to the Pont Alexandre III., and which is placed centrally with the façade of the Grand Palais des Beaux-Arts of the exhibition, on the opposite side of the new avenue. The lower drawing shows the elevation of the shorter or west side of the block, facing the Avenue d'Antin, with which the new avenue runs parallel (north and south). As this front can never be seen in combination with that to the new avenue, and abuts on a street of a different architectural character, it is treated in a different manner.

The actual difference in scale between the two drawings may be estimated by comparing the apparent height of the columns of the order, which is of the same scale in the actual building.

We regret the inconvenience of thus showing the two opposite sides of the building on a different scale, but this is not our fault; we had to take the French drawing as we found it.



Additions to Public Buildings, Reading.—Plan.



Cemetery Lodge, Warwickshire.

NEW ART GALLERY AND EXTENSION OF FREE PUBLIC LIBRARY AND MUSEUM, READING.

THE Reading Town Hall, Free Library, and Museum Buildings were erected some nineteen years ago; but owing to the fact that the Town Council were unable to obtain possession of the corner site next to the Library, &c., at that time, the scheme was to a great extent marred. Our illustration shows a view of the addition as carried out three years ago on this corner site in relationship to the adjacent buildings. The news-room is situated on the ground floor, and the picture gallery is on the first floor. While this work was being carried out the library department was altered and improved in order to bring it up to date. The plan shows the ground floor as altered; the first floor is devoted to a top-lighted picture gallery whilst the basement is utilised for the Juvenile Library. The external treatment was governed by that of the adjacent buildings, but this has been departed from where required to show the different uses of the rooms.

At the same date the museums were rearranged, and it is worthy of note that it is here the Romano-British remains from Silchester (Calleva Atrebatum) are housed. Another interesting exhibit is the facsimile of the Bayeux tapestry. The architects were Messrs. Cooper & Howell, of Reading, and the builder was Mr. McCarthy E. Fitt, also of Reading. The cost of the additions and alterations was about 8,000*l.*

CEMETERY LODGE, WARWICKSHIRE.

THE walls of this Lodge are of red brick and half-timbered work filled in with plaster. The roof is covered with Broseley tiles.

The cemetery has no mortuary chapel, and the lodge under the gateway is used for the service. The cost of the building was 398*l.*

Mr. T. W. Cutler is the architect.

THE LONDON COUNTY COUNCIL.

THE ordinary weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

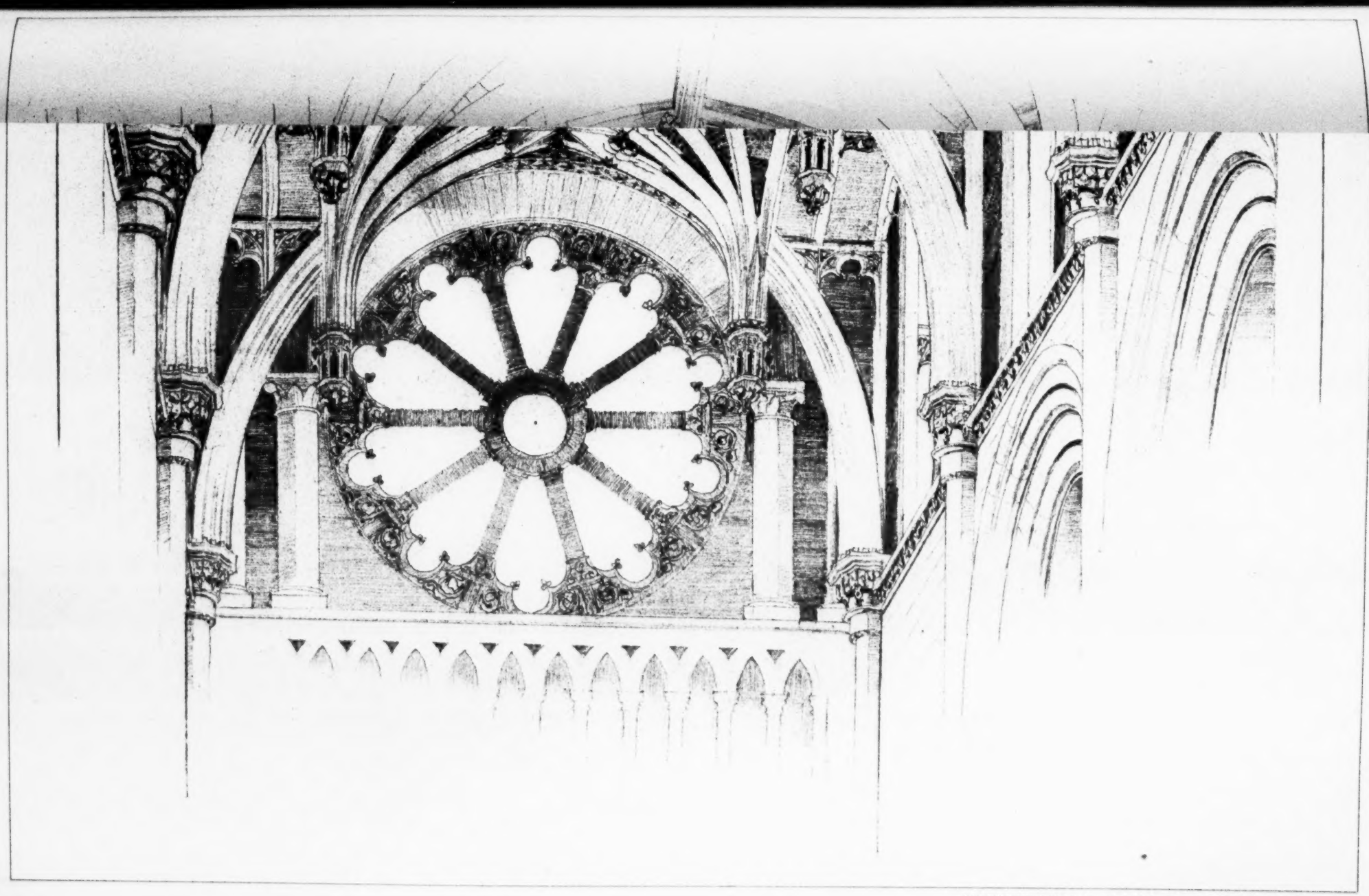
Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Islington Vestry 1,060*l.* for pipe sewer works, and Lambeth Vestry 1,770*l.* for wood paving works.

Holborn to the Strand Street: Architectural Features. — The Improvements Committee brought up the Report submitted by them a fortnight ago on the subject of the architectural features of the new street from Holborn to the Strand. The Report was printed in our issue for February 24, page 87.

One or two sentences in the Report have been altered, the following being the most important. Instead of stating that "the foregoing conditions have the full approval of the Council of the Institute," the Report now reads:—"We may state that we authorised the Council's Architect to have a conference with some of the leading members of the Royal Institute of British Architects, with the result that we believe the foregoing conditions will have the full approval of the Council of the Institute."

The same Committee, in a subsequent Report, submitted the following paragraph on the subject:—

"On February 20 we submitted to the Council a Report recommending that, in connexion with the Holborn to the Strand improvement, designs should be invited from eight leading architects for the elevations of the buildings proposed to be erected fronting on the Strand and on the crescent road proposed to be formed between Wellington-street



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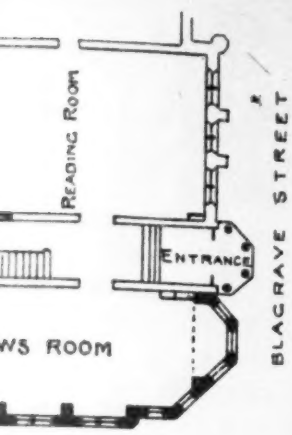
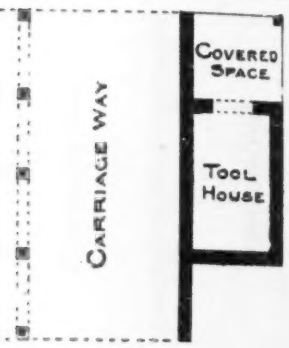
ROOF OF CHOIR, CHRIST CHURCH CATHEDRAL, OXFORD.—From a Drawing by Mr J. McLachlan.

Pugin Studentship, R.I.B.A., 1900.



nding.—Plan.



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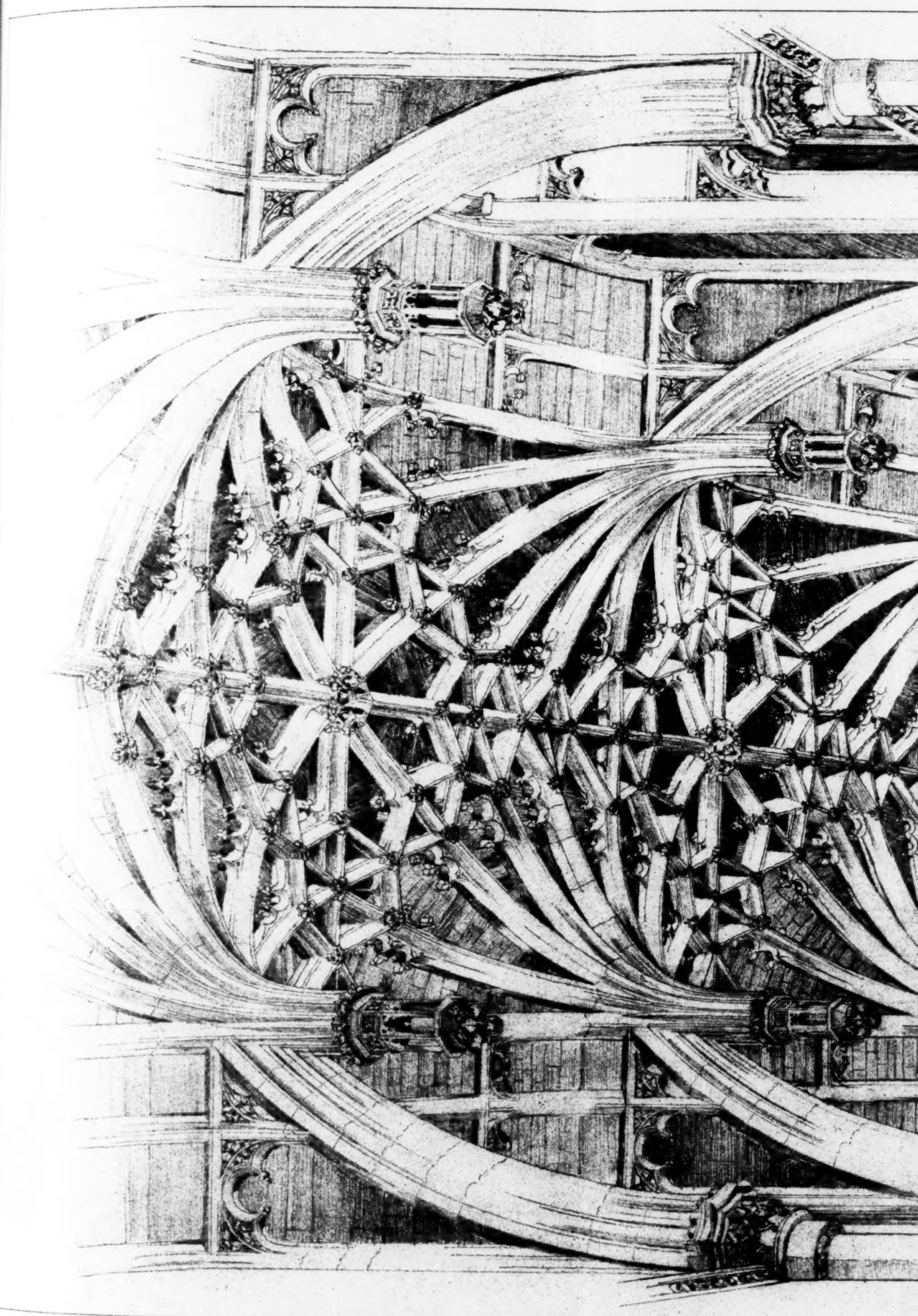

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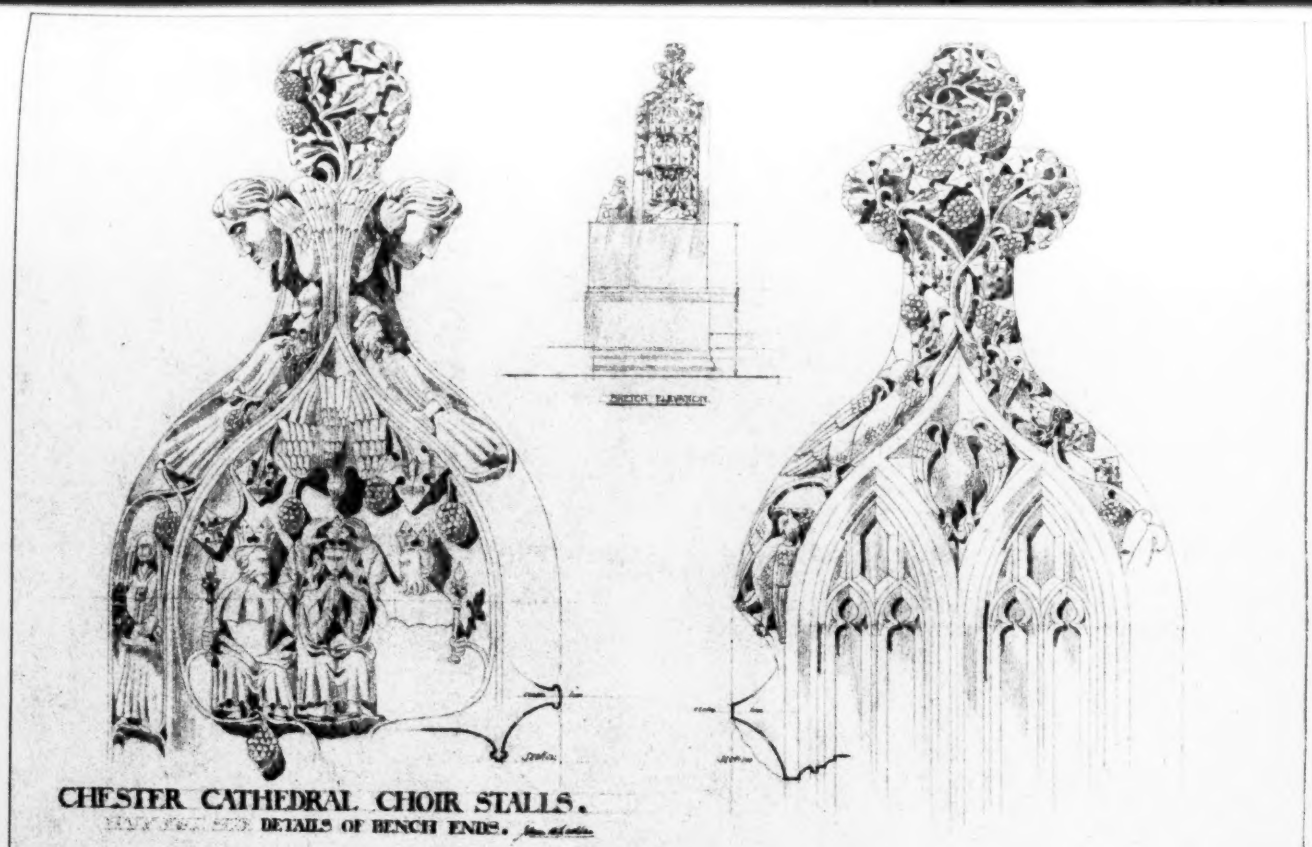
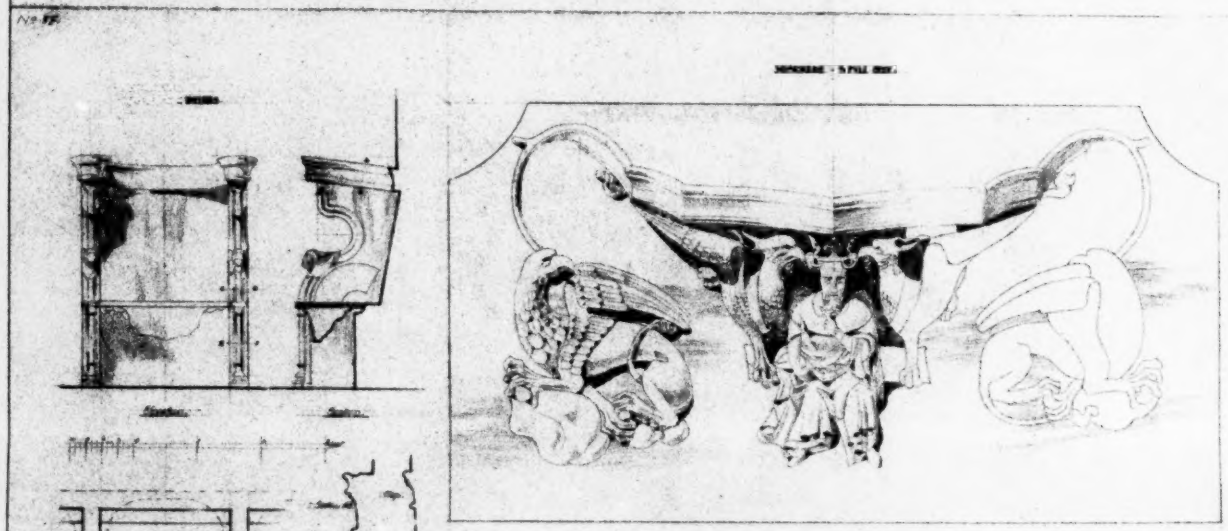
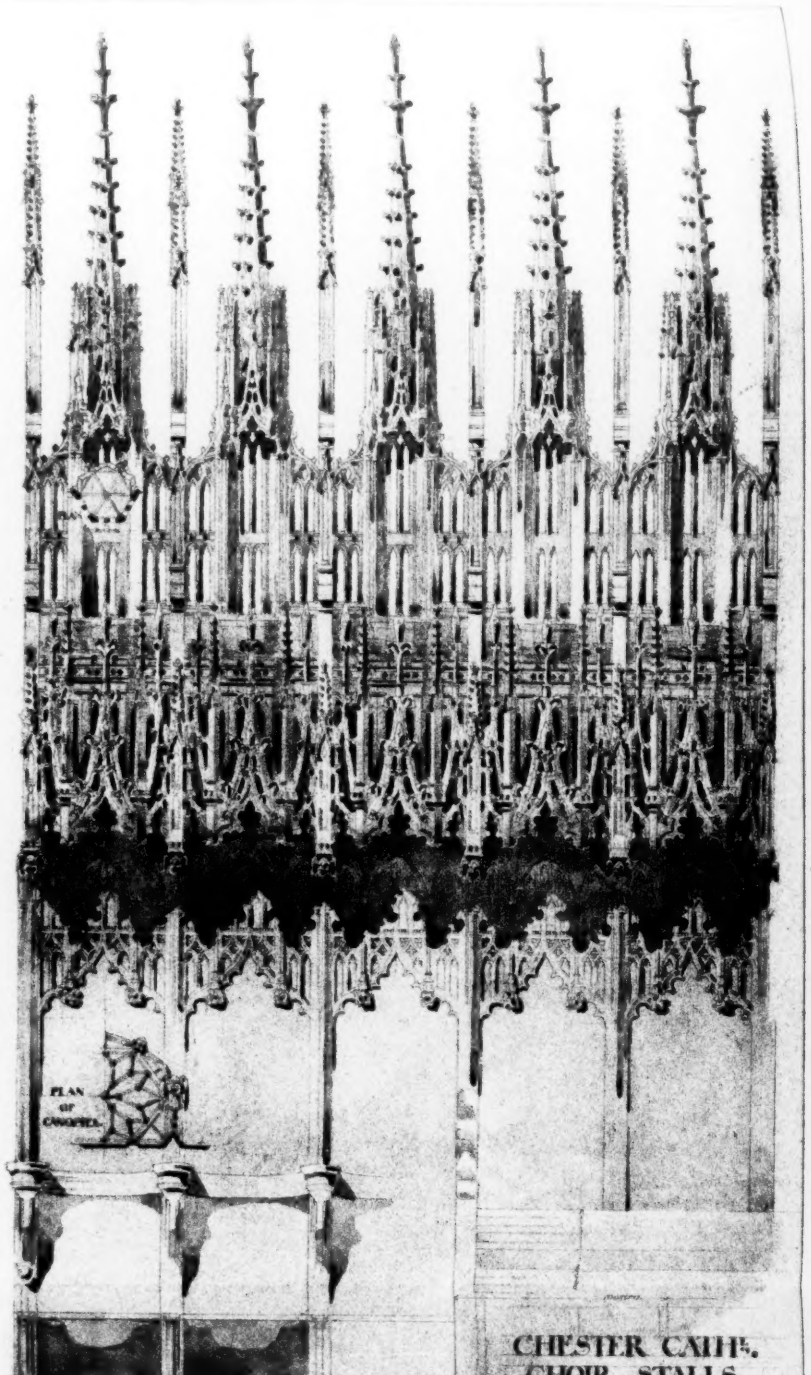


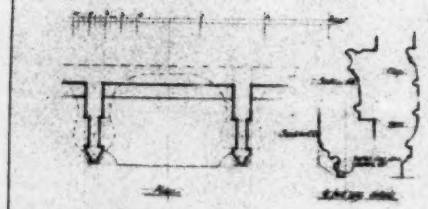
CHESTER CATHEDRAL CHOIR STALLS.

DETAILS OF BENCH ENDS.

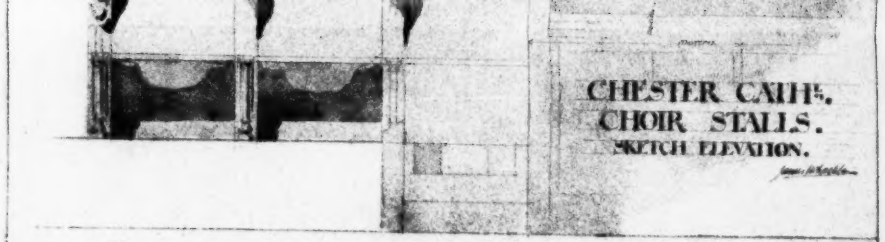




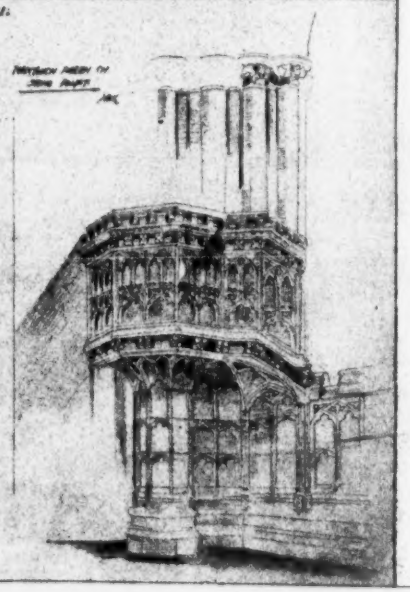
CHESTER CATH^{L}.
CHOIR STALLS.

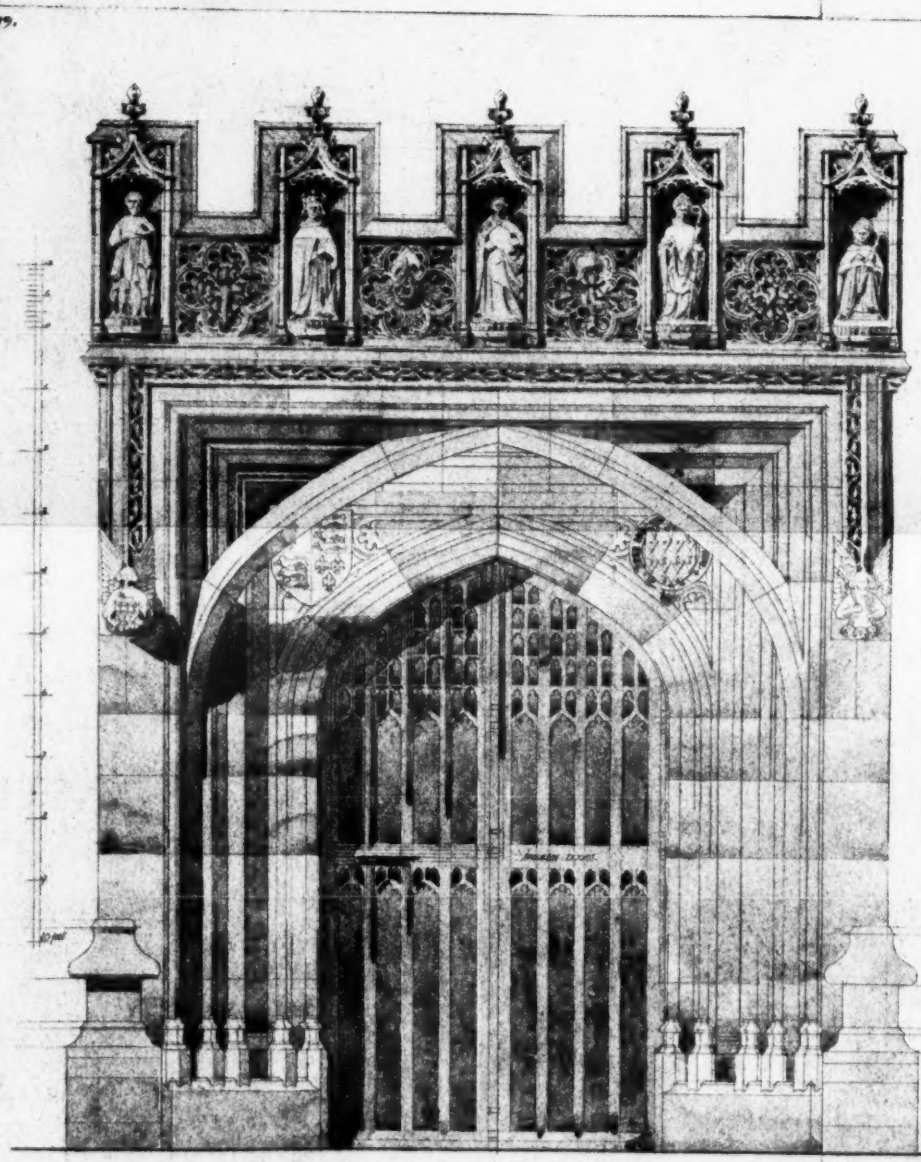


CHESTER CATHEDRAL.
CHOIR STALLS.

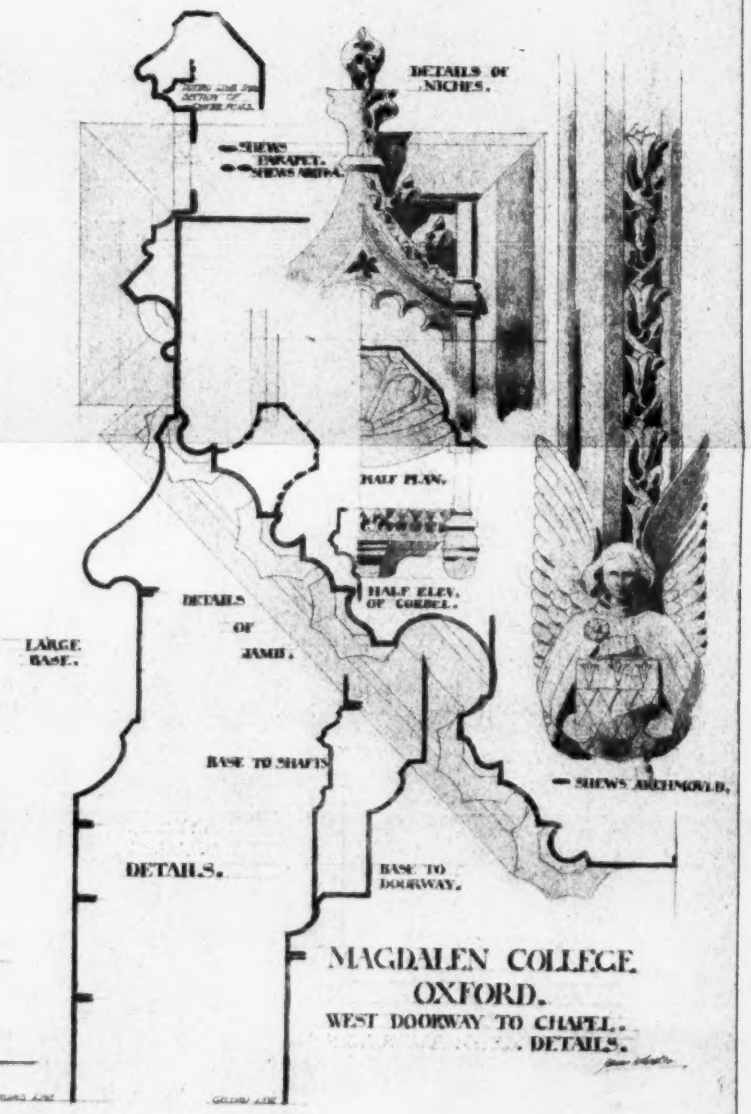


CHESTER CATH[L].
CHOIR STALLS.
SKETCH ELEVATION.





ELEVATION.



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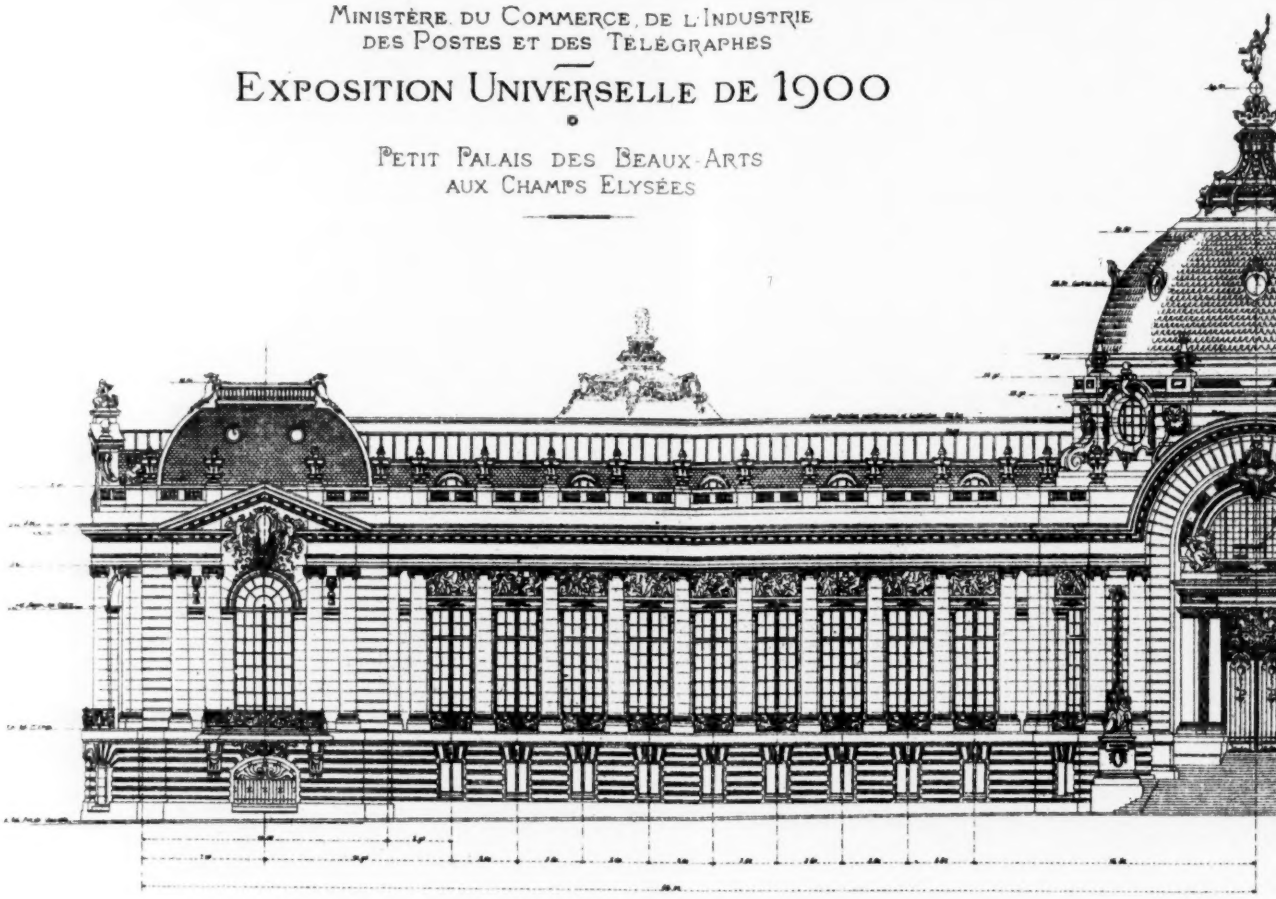
Pugin Studentship, R.I.B.A., 1900.

DRAWINGS OF MEDIÆVAL WORK.—By Mr. J. McLachlan.

MINISTÈRE DU COMMERCE, DE L'INDUSTRIE
DES POSTES ET DES TÉLÉGRAPHES

EXPOSITION UNIVERSELLE DE 1900

PETIT PALAIS DES BEAUX-ARTS
AUX CHAMPS ELYSÉES



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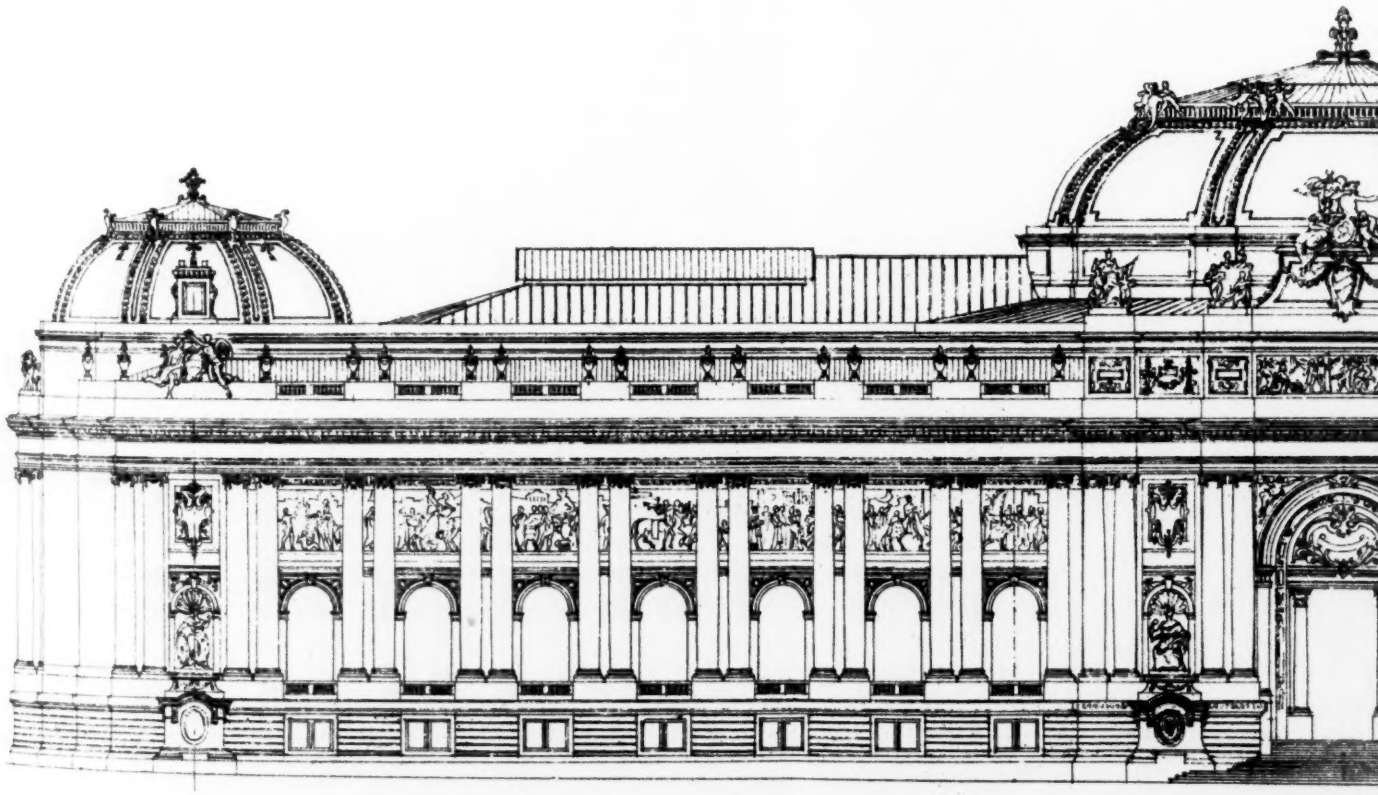

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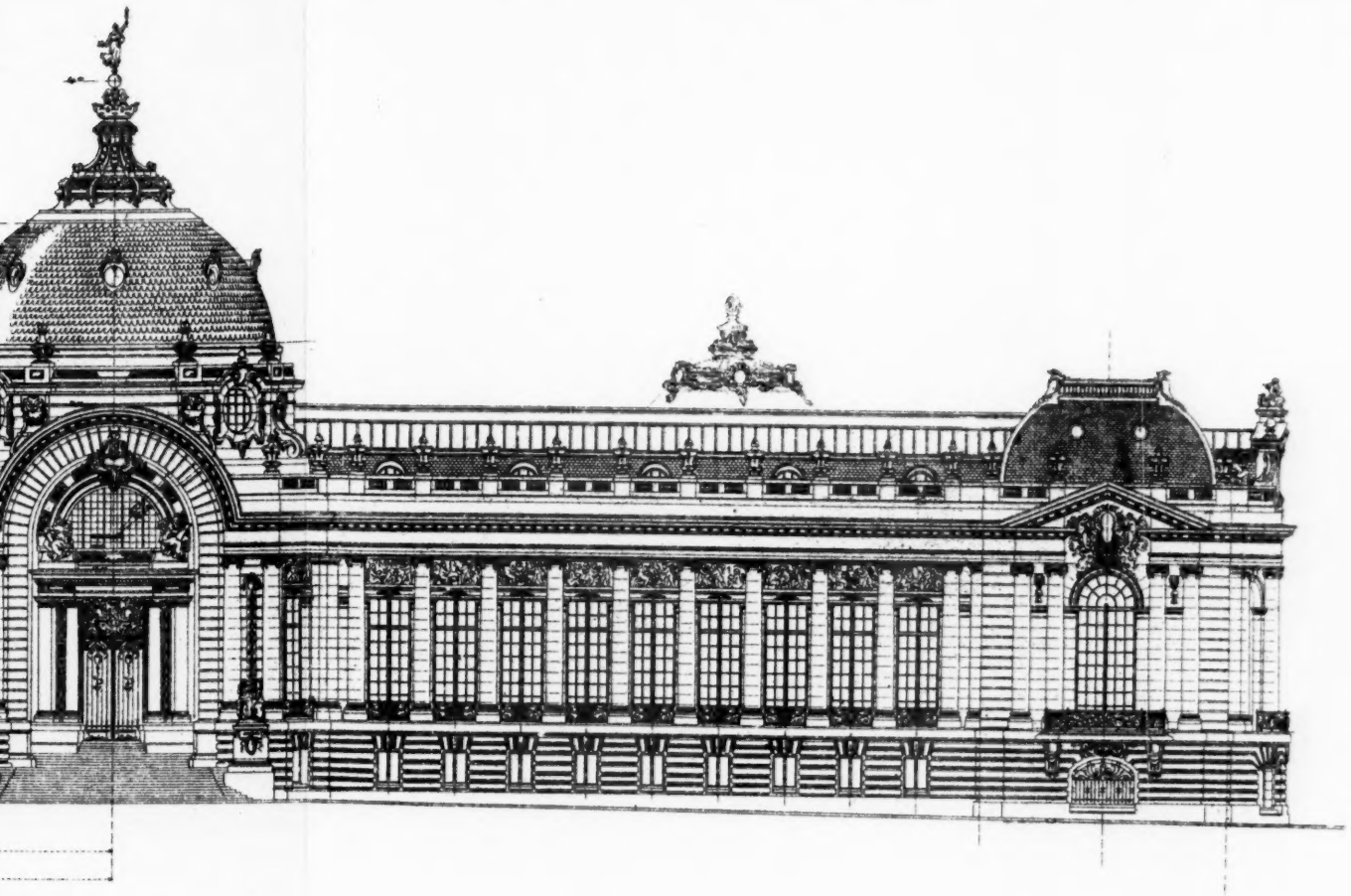

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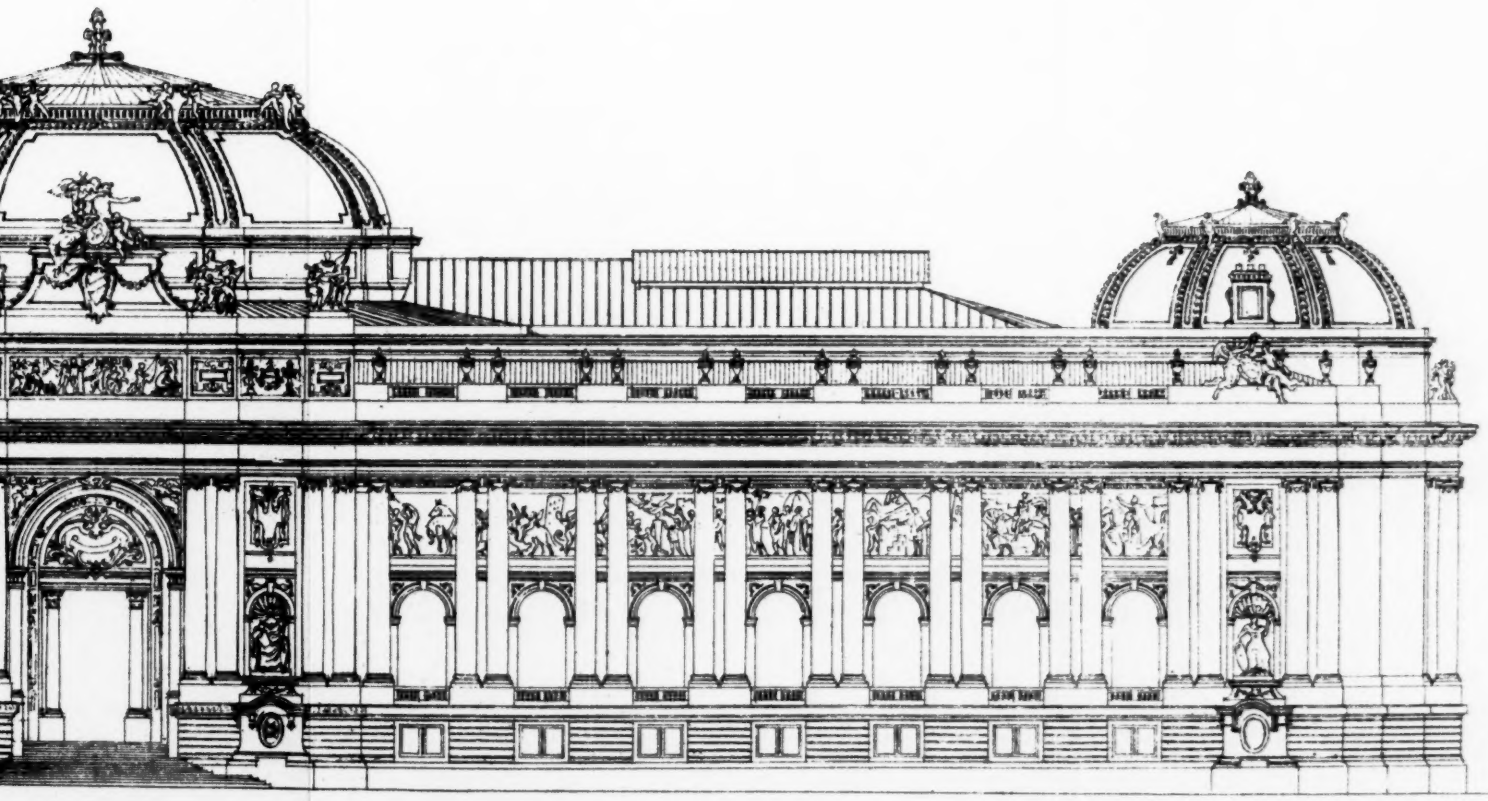
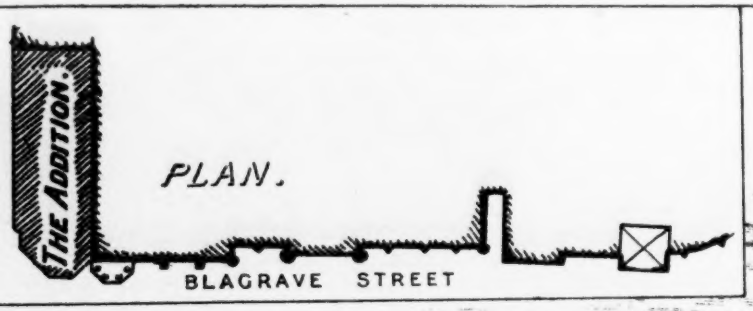


UR L'AVENUE D'ANTIN

PHOTO-LITHO. SPRAGUE & Cº. Lᵗᵈ. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



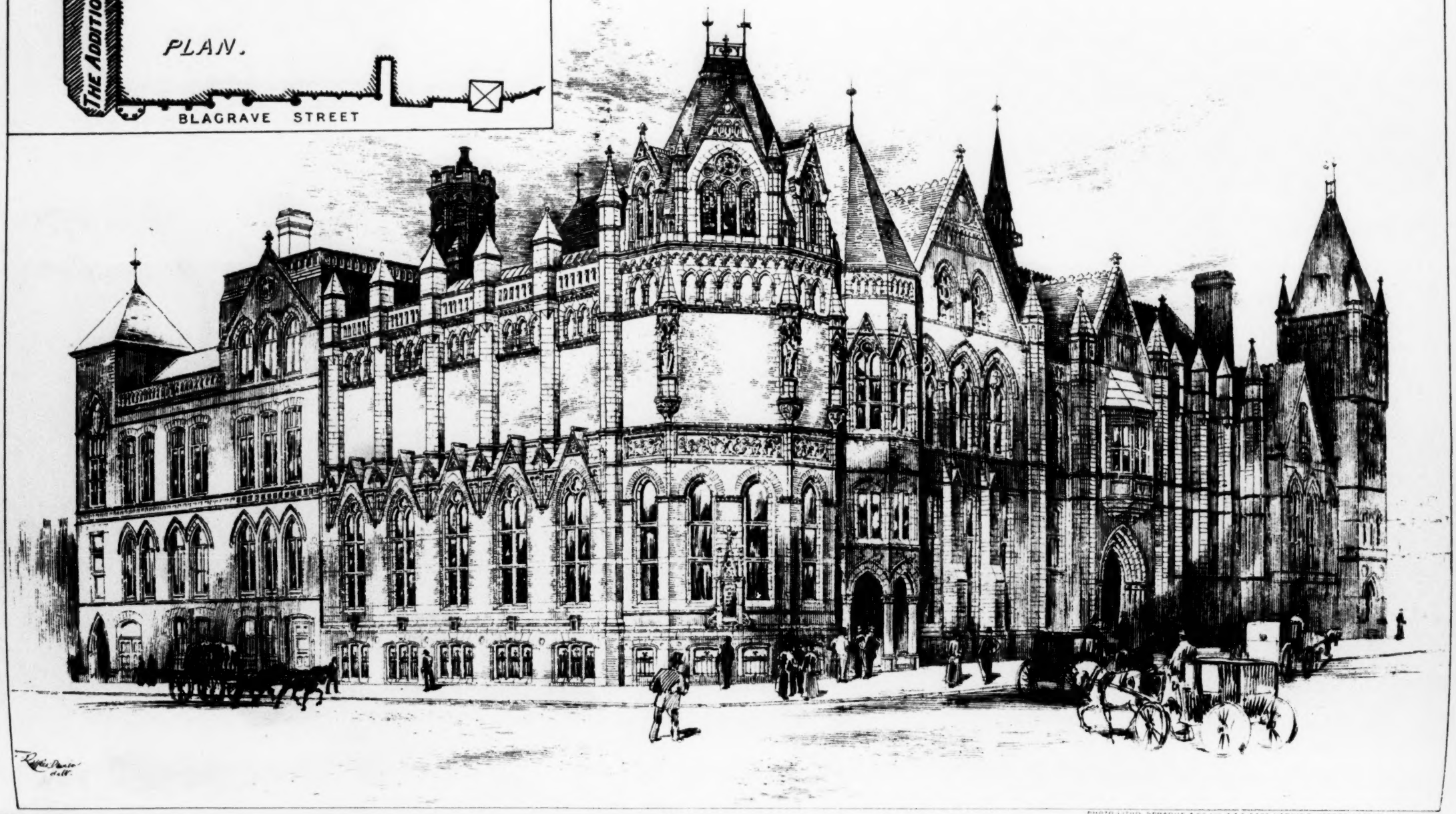


PHOTO-LITHO SPRAGUE & C° L.TD. 44 & 45 LONG LANE WEST FETTER LANE E.C.

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

CEMETERY LODGE, WARWICKSHIRE.—Mr. T. W. Cutler, F.R.I.B.A., Architect.

and Clement's Inn; and we specified in our report the exact terms and conditions upon which the designs were to be invited. Upon the suggestion of the General Purposes Committee our chairman asked the Council to postpone consideration of our report for a fortnight. Since that date (February 20), the Establishment Committee have asked us to so modify the conditions upon which designs are to be invited as not to preclude the possibility of the central portion of the site, lying between the new crescent road and the Strand, being used for the erection of a public building. We entirely concur with this suggestion, and we have therefore decided to recommend the Council to give effect to it by attaching to the proposed form of invitation the necessary additional conditions. Condition No. XVI. in the proposed form of invitation states that the style suggested is Palladian, freely treated and of a simple character. It has been suggested to us that the scope of this condition should be enlarged in order to provide that the style suggested for the designs should be Palladian or Renaissance of English character. We concur also in this suggestion, and we have decided to recommend the Council accordingly. The recommendation which we have to submit is as follows:—That, in connexion with the invitation to be given to the eight leading architects for the submission of designs for the elevations of the buildings proposed to be erected on land acquired for the Holborn to the Strand improvement, the following additional conditions be attached to the invitation:—(*a*) The architects in preparing their designs shall have regard to the possibility of the central portion of the site lying between the new crescent road and the Strand being used for the erection of a public building. (*b*) The style suggested is Palladian, freely treated and of a simple character, or Renaissance of English character."

The consideration of the matter was again adjourned.

Office Accommodation.—The Establishments Committee recommended

"(*a*) That the Council do take on lease, for a period of eighteen years from Lady Day next, the premises No. 11, Regent-street, at a rent of 450*l.* a year, including rates and taxes; and the premises No. 18, Pall Mall East, at a rent of 500*l.* a year; subject to the lease in the latter case being determinable at the option of the Council at the expiration of three, five, or seven years; that the Solicitor be instructed to complete the matter; and that the seal of the Council be affixed to the necessary documents when ready.

(*b*) That the Council do sanction the expenditure of a sum not exceeding 540*l.* for repairs, alterations, furniture, fittings, &c., at No. 11, Regent-street."

The recommendations were agreed to.

Waterloo Station Extension.—The Housing of the Working Classes Committee reported as follows:—

"By the London and South-Western Railway Company's Act of last session the railway company are empowered to extend Waterloo Station, and to execute further works to their line. In connexion with the extension of the station the company are required to submit to the Secretary of State a scheme (in accordance with the provisions of the Act restricting the displacement of persons of the labouring class), for the erection of working class dwellings on lands to be acquired by them between Boniface-street and Upper Marsh on the west side of Westminster-bridge-road for the accommodation of as many persons of the labouring class as can consistently with the requirements of the Secretary of State be accommodated on such lands. On completion of the new dwellings the company may remove so many houses occupied by persons of the labouring class, as on December 15 next before the passing of the Act provide accommodation for the number of persons for whom new dwellings have been completed. The Act also provides that the Council and the Vestry of Lambeth are to be supplied with a copy of any scheme that may be submitted by the company to the Secretary of State. In accordance with this provision, the company have submitted for the Council's observations, plans of the dwellings they propose to erect at Boniface-street, showing accommodation on the basis of two persons per room for 290 persons. The company have intimated that the plans have been provisionally approved by the Secretary of State. We have carefully considered the plans and have no observations to offer upon them, and we have given instructions for the company to be so informed. We may mention that 1,524 persons of the labouring class will probably be displaced in the parish of Lambeth under the Act, and we would point out that the company must submit a further scheme or schemes for providing new dwellings from time to time as they require to displace persons of the working class residing in that parish."

Site for Gladstone Memorial, Holborn to Strand Street.—The Improvements Committee stated that the Gladstone Memorial Committee had asked the Council to allot a site in connexion with the new street from Holborn to the Strand for a monument to the memory of Mr. Gladstone.

"The memorial, as designed by Mr. Hamo Thornycroft, has a cruciform base, measuring on plan submitted about 26 ft. every way with a pavement round it about 6 ft. wide. The superficial area of the ground required for the structure will be about 500 ft., or including the pavement about 1,100 ft. We understand that it is proposed that the memorial shall have an architectural basement of Portland stone and shall be surmounted in the centre by a bronze statue of Mr. Gladstone, in the robes of the Chancellor of the Exchequer. Seated statues or groups, also in bronze, will be placed on the projecting portions of the base, and the total height of the memorial will be about 32 ft. Mr. Thornycroft has submitted to us a small rough model of the proposed memorial group, and, after the fullest consideration, we are of opinion that the Council may well be advised to place at the disposal of the Memorial Committee a site for their monument to the memory of Mr. Gladstone. In connexion with the improvement in question there are at least three very appropriate sites upon which statues could be erected, viz.—(*a*) At the junction of the new main street with the crescent-road; (*b*) immediately to the west of St. Clement Danes Church; and (*c*) immediately to the west of the church of St. Mary-le-Strand."

The Memorial Committee, after examining the merits of each of the three sites, have asked the Council to allot that immediately to the West of St. Clement Danes Church, which will afford a south-westerly aspect for the Memorial, and the Improvements Committee recommended—

"That, subject to the assent of H.M. Commissioners of Works, &c., being obtained to the erection of the memorial in compliance with the Act 17 and 18 Vict., cap. 33, and upon the condition that the exact position and the substructure of the memorial, together with the architectural and other details thereof, shall be entirely subject to the Council's approval, the Council do allot to the Gladstone Memorial Committee a site to the west of St. Clement Danes Church for the purpose of the monument proposed to be erected by the Memorial Committee."

Consideration of the matter was adjourned.

Theatres, &c.—The following applications under the Metropolis Management and Building Acts Amendment Act, 1878, were, on the recommendation of the Theatres and Music Halls Committee, agreed to:—

A waterchute in the grounds of the Crystal Palace (Messrs. Garlick & Sykes for Mr. H. Gillman).

Imperial Court at the London Exhibitions (Mr. A. O. Collard).

Arrangements at the New Cross Empire (Mr. F. Matcham).

Westminster Electric Supply Corporation: Price Charged for Current.—The Highways Committee recommended, and it was agreed:—

"That the Council do make a representation to the Board of Trade, under the provisions of the Orders granted to the Westminster Electric Supply Corporation, that it is desirable that the maximum price allowed to be charged should be reduced from 8d. to 5d. per Board of Trade unit; and that the Board be asked to consider the matter with a view to such inquiry as it may think fit, and should it so decide, to make the necessary order in the manner provided for in the Orders granted to the company."

Millbank Estate.—The Housing of the Working Classes Committee reported as follows, the recommendation being agreed to:—

"On December 19, 1899, we reported that we had had under consideration the course to be pursued with regard to the erection of the dwellings on the Millbank Estate, Westminster, which have yet to be built. Out of the 17 blocks proposed to be erected, one block, viz., Hogarth Buildings, is now in occupation, and six further blocks are being erected under contract by Messrs. Holloway Brothers. There remain, therefore, ten blocks to be proceeded with. In order to expedite the completion of the buildings on the estate, we proposed that the remaining blocks should be erected under one contract. For this purpose we had bills of quantities prepared for two blocks, to be called Reynolds Buildings, and proposed to invite tenders for these two blocks, on the understanding that the contractors would erect the remaining eight blocks on the schedule of prices for Reynolds Buildings, and on a supplementary schedule prepared so as to include any items not provided for in the quantities for Reynolds Buildings. The adoption of this course would render a large area subject to the control of one contractor, who would thus make a considerable saving in the cost of supervision and administrative staff. Before it was decided to invite tenders, the manager of works was consulted as to whether he was prepared to carry out the work of erecting the remaining blocks on the estate at a schedule of prices. He was, however, unable to undertake the work except at prices 3½ per cent. in advance of those for which the six blocks are now being erected on the estate. We therefore recommended:—'That the Housing of the Working Classes Committee be authorised to invite tenders for the erection of Reynolds Buildings (two blocks), Millbank Estate, such tenders to be based on the understanding that the contractor whose tender is accepted will undertake the erection of the remaining eight blocks at the same prices as those upon which the tender for Reynolds Buildings is based.' The Council adopted the above recommendation, and we have therefore invited tenders in accordance with it.

We have now to report on the following tenders, which were opened by the Council on February 27, 1900, and referred to us:—

Messrs. Spencer, Santo, & Co., Limited ...	£15,328
„ Holloway Brothers	16,437
„ Perry & Co.	16,453
„ Martin Wells & Co.	16,495
Mr. B. E. Nightingale	18,689
„ J. O. Richardson	19,082
„ J. F. M. Patrick	20,444
„ F. G. Minter	20,605

We have made the usual inquiries with regard to Messrs. Spencer, Santo, & Co., who have submitted the lowest tender, and we have been unable to find any reason why their tender should not be accepted. We have forwarded estimates of the cost of the various blocks to the Finance Committee, who will submit the usual financial statement with regard to the dwellings. The total estimated cost of the ten blocks is 119,043*l.*

The particulars as to cost and accommodation provided are shown in the subjoined table—

Name of buildings.	Number of tenements of			Number of persons to be accommodated.	Architect's building estimate.	Estimated cost of supervision, architect's services, &c.	Total estimated cost of buildings.
	One room.	Two rooms.	Three rooms.		£	£	£
Reynolds Buildings (two blocks) ...	—	40	40	400	17,000	1,125	18,125
Gainsborough Buildings (two blocks)	2	38	40	396	20,219	675	20,894
Lawrence Buildings	—	50	16	296	27,635	719	28,354
Maclise Buildings	—	50	16	296			
Landseer Buildings	—	20	25	230	21,796	584	22,380
Mulready Buildings	—	20	25	230			
Morland Buildings.....	—	30	30	300	29,002	288	29,290
Wilke Buildings.....	—	30	30	300			
Totals.....	2	278	222	2,448	115,652	3,391	119,043

We may point out that the architect's estimate for Reynolds Buildings is 17,000*l.*, whereas the lowest tender is 15,328*l.*, or 1,672*l.* less than the estimate; this shows a saving of 9·8 per cent., and if this tender is accepted a saving will be effected of about 11,650*l.* on the total estimated cost of the ten buildings, which, as above stated, amounts to 119,043*l.* We are satisfied that no charge on the county rate will be involved by the erection of the dwellings. In accordance with the practice adopted by the Council with regard to previous contracts for the erection of the dwellings on the Borough-road site, the cottages at Brook-street, Limehouse, and Leighton, Millais, Romney, Rossetti, Turner, and Ruskin Buildings, Millbank Estate, the tenders have been made upon the bases of advances being made to the contractor to the extent of 80 per cent. of the value of the work done. It is therefore necessary that the Standing Order relating to payments to contractors should be suspended. We recommend—(*a*) That the Standing Order relating to payments to contractors be suspended, so that advances to the extent of 80 per cent. of the value of the work done may be made in respect of the remaining ten blocks of dwellings to be erected on the Millbank site. (*b*) That the estimates of 18,125*l.*, 20,894*l.*, 28,354*l.*, 22,380*l.*, and 29,290*l.* to be submitted by the Finance Committee, in respect of the erection of the remaining ten blocks of dwellings to be erected on the Millbank Estate be approved; that the tender of Messrs. Spencer, Santo, & Co., Limited, be accepted; that the solicitor be instructed to prepare the necessary contract; and that the seal of the Council be affixed to such contract when ready."

Main Drainage Extension: Northern Outfall

Sewer.—The Main Drainage Committee recommended, and it was agreed :—

"That an advertisement be issued inviting tenders for the construction, in accordance with the plans prepared by the Engineer, of a portion of the two additional lines of outfall sewers between the Abbey Mills pumping-station and the Barking outfall works, such portion to commence about 150 ft. west of the East London Cemetery Bridge and to extend for about 5,472 ft. eastwards.

The Water Question.—The greater part of the sitting was devoted to a consideration of a long report by the Water Committee dealing with the recommendations of the Royal Commission with regard to the water supply of London. The Committee recommended :—

(*a*) "That, in view of the urgent reasons which exist against further delay in dealing with the question of London water supply, the First Lord of the Treasury be requested to receive a deputation with reference to the London Water (Purchase) Bill and the London Water (Welsh Supply) Bill. (*b*) That it be referred to the Parliamentary and Water Committees to make the necessary arrangements for the deputation."

After a long debate,

Mr. J. Stuart, M.P., said next week Parliament would have to consider the Council's Water Bills, and he agreed that an attempt should be made to find out the attitude of the Government towards those measures. Purchase was practically inevitable, and in order to progress they must give up something. He suggested as a rider to recommendation "A" the addition of the words, "Having regard to the recent Report of the Royal Commission."

An amendment having been rejected by seventy votes to thirty, the Report of the Committee was adopted by seventy-two votes to twenty-nine. Mr. Stuart's rider to the Report was then agreed to.

The Council adjourned soon after seven o'clock.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Formation of Streets.

Holborn.—That the order of the Council of February 6, 1900, sanctioning the formation or laying-out of two new streets for carriage traffic on the east side of Tottenham-court-road, be varied so that the time within which the roadways of the proposed streets to lead out of Tottenham-court-road into Chenies-street and Store-street respectively were required to be clearly defined throughout by posts and rails, or so otherwise as the Council should permit, and thrown open to the public as highways, be extended to three years from February 6, 1900.—Agreed.

Westminster.—(*a*) That the resolution of the Council of December 5, 1899, sanctioning the formation or laying-out of eight new streets upon the Millbank Estate, Grosvenor-road, Westminster, be rescinded. (*b*) That an order be issued to Mr. J. Briggs sanctioning the formation or laying-out of eight new streets for carriage traffic upon the Millbank Estate, Grosvenor-road, Westminster, as shown by the plans, dated November 2, 1899, as modified by the plan dated February 10, 1900, and the sections, and particulars submitted with the application to the Council on behalf of the Housing of the Working Classes Committee of the Council.—Agreed.

Lines of Frontage.

Battersea.—A four-story building on the site of No. 27, St. John's-hill, Battersea (Messrs. H. Wakeford & Sons for the Commanding Officer of the 4th Volunteer Battalion, East Surrey Regiment).—Consent.

Greenwich.—Six semi-detached houses with bay windows on the east side of Beaconsfield-road, Westcombe Park, Greenwich (Messrs. Newman & Newman for Mr. J. Heath).—Consent.

Hampstead.—That the appliication of Mr. A. O. Collard for an extension of the period within which the erection of buildings on the north-east side of High-road, Kilburn, to abut also upon Kilburn Priory-road, was required to be completed, be granted, upon condition that the buildings referred to be completed within three years from May 3, 1898.—Agreed.

Lewisham.—One-story addition, in course of erection, at the rear of the "Spotted Cow" public-house, No. 104, Hither Green-lane, Lewisham, abutting on Thornford-road (Mr. L. A. Withall for Mr. T. F. Coles).—Consent.

Lewisham.—A church, in course of erection, on the south-west side of Adelaide-road, Lewisham with projecting vestry and buttresses (Messrs. Dorey & Co. for the Ecclesiastical Commissioners.)—Consent.

Peckham.—One-story shops on part of the forecourts of Nos. 20 and 22, Gibbon-road, Nunhead (Mr. S. Green).—Consent.

St. George, Hanover-square.—A building with projecting porch, oriel windows, balconies, and shop fronts (Mr. P. Hoffmann for Mr. H. Bailey).—Consent.

Dulwich.—A conservatory on the south side of No. 21, The Avenue, Gipsy-hill, to abut upon Colby-road (Mr. W. G. Loe for Mr. J. F. Prescott).—Refused.

Islington, North.—Three houses on the north-east side of Highgate-hill, Islington, adjoining the "Old Crown Inn" (Messrs. J. E. Goodchild & Son for Mrs. Griffiths).—Refused.

Lambeth, North.—A one-story shop upon the forecourt of Nos. 2 and 4, Waterloo-road, Lambeth (Mr. H. J. McOlney for Mr. M. Edgley).—Refused.

Marylebone, West.—† Two blocks of residential flats with bay-windows, porches, loggia, and balconies on the east side of Maida-vale at the corner of Hall-road, St. Marylebone (Messrs. Boehmer & Gibbs for Messrs. G. H. & A. Bywaters).—Refused.

Wandsworth.—† Buildings on the north side of Marius-road, Balham High-road, Wandsworth (Mr. F. Perks for Mr. R. Simpson).—Refused.

Projections.

Greenwich.—Wood and tile pents at the entrances to Nos. 21 and 22, Spencer-villas, Little Heath, Old Charlton (Mr. J. Bull).—Consent.

Hampstead.—A wooden porch with tiled roof in front of a house known as Nutwood, Elsworthy-road, Hampstead (Mr. A. F. Faulkner, for Mr. W. Willett).—Consent.

Lewisham.—Bay windows to nineteen houses on the east side and twelve houses on the west side of Broadfield-road, Hither Green, Lewisham (Mr. G. F. Logsdail for Mr. A. Cameron Corbett, M.P.—Consent.

Norwood.—Retention of a four-story bay window in front of No. 156, Tulse-hill, Norwood (Mr. M. Marsland for Mr. G. W. Drysdale).—Consent.

Greenwich.—That the consent of the Council of February 6, 1900, to the erection of wood and tile pents over the entrances to eighteen houses in Swallowfield-road, twelve houses in Priolo-road, and fourteen houses in Sundorne-road, Charlton (Mr. R. J. Abbott) be modified by the insertion of the words "except that of the pents to the fourteen houses in Sundorne-road" after the words "that the whole of the exposed woodwork."—Agreed.

Kensington, South.—An iron and glass-covered way at the entrance to No. 3, Bolton-gardens West, Old Brompton-road, Kensington (Messrs. H. Smith & Son for Mr. H. Homewood Crawford).—Refused.

Kensington, South.—An iron and glass illuminated sign at the Cathcart-road entrance to the "Ifield Arms Hotel," Ifield-road, South Kensington (Mr. W. Knight for Mr. H. Phipps).—Refused.

Width of Way.

Bow and Bromley.—That the application of Mr. Max Clarke for an extension of the period within which the erection of a warehouse building on the east side of Fawe-street, Morris-road, Bromley-by-Bow, was required to be commenced, be granted, upon condition that the building referred to be commenced within one year from September 1, 1899.—Agreed.

Hackney, Central.—A coal-cellar, water-closets, &c., at the Albion Baths, on the south side of Albion-terrace, Dalston (Mr. T. J. Bailey, for the School Board for London).—Consent.

Hackney, South.—Additions at the rear of No. 124, High-street, Homerton, at less than the prescribed distance from the centre of Mackintosh-lane (Mr. J. T. Lawrence, for Mr. W. Berry).—Consent.

Kensington, South.—A four-story building on the site of No. 5, Duke's-lane, Church-street, Kensington (Mr. W. G. Hunt for Mr. W. F. Annett).—Consent.

Rotherhithe.—A one-story workshop on the west side of Regia-place (late Princes-place), St. Mary, Church-street, Rotherhithe (Messrs. Witherington & Hogwood for Messrs. G. C. and F. B. Lowe).—Consent.

Bermondsey.—Additions to the school on the west side of Neckinger-road, Bermondsey, at less than the prescribed distance from the centre of Horney-lane (Mr. T. J. Bailey, for the School Board for London).—Consent.

Space at Rear.

Whitechapel.—A modification of the provisions of Section 41 (1) (vi.) of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of a mission-hall, with a reading-room and dwelling-rooms over, on the site of No. 189, Whitechapel-road, with an irregular space at the rear (Mr. W. A. Pite, for the Rev. D. Baron).—Refused.

Line of Frontage and Width of Way.

Woolwich.—The rebuilding of the "Red Lion" public-house on the north side of Shooters Hill, Plumstead, and the erection of five cottages on the north side of a passage-way leading from Shooters Hill to Red Lion-lane (Mr. J. O. Cook for Mr. C. Beasley).—Refused.

Adaptation of Street for Carriage Traffic.

Hoxton.—That an order be issued to Mr. J. R Dixon sanctioning the adaptation for carriage traffic of the north end of Bath-place, Rivington-street, Shoreditch (for the Vestry of Shoreditch).—Agreed.

The recommendations marked † are contrary to the views of the Local Authority.

BETHNAL GREEN INFIRMARY, CAMBRIDGE-ROAD, LONDON, E.

ON Monday the new Infirmary in Cambridge-road, Bethnal Green, was opened. The new buildings have been designed for the accommodation of 750 patients together with the whole of the staff necessary for the working of the institution. The site has a length of 740 ft. with a frontage to Cambridge-road of 330 ft., and of 280 ft. to Russia-lane, with an area of about 4½ acres. The Cambridge-road frontage is partly occupied by an entrance block containing on the ground floor a commodious committee-room with clerk's office adjoining, waiting room, porter's office, and retiring-rooms for ladies and gentlemen; on the first floor are suites of apartments for the steward and engineer. An archway in connexion with the block, and under the supervision of the porter, gives entrance to a private approach road along the north side of the site, from which convenient access is obtained to the two receiving rooms for patients, the administrative block, stores, and all other departments.

The infirmary is planned with a central administrative block, situated midway between the Cambridge-road and Russia-lane boundaries of the site, and contains the medical officer's, matron's, nurses' and female servants' quarters, and the main kitchen and stores departments. This block is of four stories with basement. The basement contains storage for coal, firewood, and heavy goods, and has cart access by means of an inclined roadway leading from the main approach road. Lifts to ground floor are provided for goods and coal.

The ground floor contains in front an entrance hall, from which a short corridor leading to the left gives access to the medical officers' residence and office, the dispensary and assistant medical officers' common room and retiring room. Off a corresponding corridor leading to the right are situated the chaplain's office and matron's sitting-room, nurse's mess-room and recreation-room; staircases also lead up to the nurse's quarters above. A coal service room is provided from which the coal received by lift from the store below is distributed in trolleys to the various wards. Separating the front portion of the block from the back is the main corridor running east and west to the wards, and enlarged at its centre to form a serving-hall. Opening from the serving-hall is the main kitchen, which, in addition to being provided with a large coal range, is fitted with the most approved gas and steam cooking apparatus. Grouped around the main kitchen are the scullery, vegetable scullery, larder, dairy, pantry, &c. Supplies are brought up to this department by a lift from the stores below, and all refuse passes down glazed shoots into portable receivers in the low level yard at back, and is thence carted away. To the east of the main kitchen, &c., is a stores department, with steward's office, large general store with gallery, flour store, and bread-room. Adjoining is a mess room for male servants. The storage for heavy goods is below these rooms, with communication by lift and staircase. The receiving-room and office for stores is also below. On the west of the main kitchen is a department under the direct control of the matron, and comprising the following rooms :—servants' hall with scullery attached, matron's office, matron's store (linen), and large sewing-room. To the rear of, and detached from, the matron's department, though having easy communication therewith, is the steam laundry. This is contained in a two-story building completely detached from the rest of the infirmary buildings, and containing, in addition to the laundry, the boiler and machinery-rooms, steam coal stores, workshops, and mortuary. The laundry contains receiving and delivery rooms, large general washhouse, drying-room, and ironing-room, separate washhouse, drying-room, and ironing-room for officers' linen, also foul washhouse and disinfecting-room. All these apartments are fitted with the latest and most approved machinery and appliances for laundry work, the machines being separately driven by electric motors. The mortuary is on the same floor as the laundry, completely separated therefrom, and comprises in addition to the mortuary proper, a post-mortem room, fitted with a revolving table and the most advanced sanitary appliances, and also a room in which visitors may inspect the remains of deceased relatives or friends. A lift is provided by which coffins are lowered to the mortuary yard below. The basement story under the laundry is occupied by the boiler-room, which contains three large Galloway's Lancashire boilers, the engine and dynamo room containing duplicate sets of engines and dynamos for supplying electric light to the whole institution and power to the laundry, the battery-room for electric accumulators, the hydraulic accumulator and pump-room, containing steam fire-pumps and steam pumps for

supplying power to the hydraulic lifts and accumulator in connexion with the latter. Adjoining is the engineer's workshop and store. A large steam-coal store adjoins the boiler-room, and under the mortuary is situated the carpenters' workshops and coffin store. In connexion with the boiler and engine rooms, subways are arranged for conveying steam, water, and other pipes and electric wires to all parts of the buildings.

The medical officer's residence has been provided at the north-east angle of administrative block and incorporated with main building. The accommodation provided is, on basement floor, kitchen, scullery, and usual offices; on ground floor, entrance-hall and staircase and two reception-rooms; on the first floor, four bedrooms, bath-room, &c.; and on the second floor, a servants' bedroom, box-room, &c. A common-room, or mess-room, is provided for the assistant medical officers on ground floor of administrative block as before mentioned, and on the first floor, approached by a separate staircase, are provided a study or sitting-room and four bedrooms, with bath-room, &c. Ample accommodation has been provided for the nursing staff on the ground and upper floors of the administrative block. The nurses' mess and recreation rooms, already mentioned, are on the ground floor, and are large and cheerful apartments. A wide staircase leads up from the nurses' corridor near these rooms to the three floors of nurses' bedrooms above. This staircase gives access to all the nurses' rooms, but subsidiary staircases are also arranged for administrative purposes and use in emergencies. The matron's bedroom is on the first floor, in such a position as to command the nurses' corridor on that floor, and an assistant matron's room occupies a corresponding position on each of the floors above. Adjoining these rooms is a private staircase for the use of the matron and her assistants and for facilitating the supervision of the nurses. The nurses number eighty, each having a separate bedroom, seventeen on the first floor, thirty-five on the second floor, and twenty-eight on the third. Bath-rooms are provided for the nurses in convenient positions. All water-closets have cross ventilated lobbies. In order to provide for the better circulation of air around the large block of buildings which the provision of such complete administrative accommodation necessitates the continuity of the building has been interrupted at suitable points, and the necessary communication obtained by bridges across the spaces thus formed. A portion of the third floor of this block is devoted to associated sleeping accommodation for the female servants, twelve or fourteen in number. A separate staircase from the ground floor is provided for their use, also bath-room, &c.

The wards are contained in separate blocks or pavilions, three on each side of the administrative block and, connected therewith and with each other by a corridor on the ground floor only. This corridor is an extension to the east and west of the main corridor, described in connexion with the administrative block, and is 10 ft. wide throughout. It has a flat roof, which forms a promenade for convalescent patients in fine weather. The receiving-rooms for patients (a (separate suite being provided for each sex) have direct access to this main corridor. Each consists of a one-story building, containing entrance porch, receiving ward with two beds, bath-room, and water-closet. Access is obtained to these from the private approach road. The wards are all of three stories and extend northwards and southwards of the main corridor. The axis of all the wards is thus north and south, this being the best possible disposition for the reception of sunlight on both sides. The wards are all arranged on one principle, and the following description of one ward will serve for all except the isolation wards, which will be separately mentioned. The number of patients for which each ward is designed varies from twenty to thirty-six, the majority, however, being intended for twenty-eight patients. Each pavilion contains a spacious staircase, a direct acting hydraulic bed lift, and a food and coal lift for the service of the upper wards.

Each ward is approached from the main corridor or staircase by a short well-lighted and ventilated corridor, opening from which are a small ward for two special cases, with separate water-closet accommodation; a ward kitchen or nurses' duty room, fitted with cooking range, sink, dresser, and a well-lighted and ventilated food cupboard; a small store-room for patients' clothes, and another small store-room for ward linen and requisites. The large wards are 24 ft. wide, arranged for the beds in pairs on each side between the windows. The wards are warmed by central stoves. These stoves are arranged to introduce warmed fresh air to the wards. Each ward has an additional means of heating by low pressure hot water radiators at sides. Fresh air is admitted to these, and, after being warmed, is passed into the wards. In summer weather, cool fresh air can be admitted through both stoves and radiators. All wards have foul air extraction shafts. All windows have ventilating hoppers of special design at the top, and have sliding sashes with wide guard heads at bottom for allowing of ventilation at the meeting rails without draught. Tobin ventilation shafts are also provided. Provision is thus made for the efficient ventilation of the wards in all states of the atmosphere. Two sanitary annexes or towers are provided at the ends of each ward, and approached therefrom through cross ventilated lobbies. One annex contains water-closets with siphonic apparatus, and a sink-room with slop sink and special appliances for cleansing bed-pans. The other annex contains a bath-room and lavatory, with fittings for regulating the supply of hot and cold water. At the end of ward and between the annexes is provided a balcony for the use of convalescent patients. Iron fire-escape staircases are provided at the ends of wards farthest from the main staircase. Water-closet accommodation, entirely separate from that for patients, is provided for nurses on each floor of each pavilion.

Isolation wards sufficient for the treatment and classification of all contagious and offensive cases are provided in three three-story pavilions. These are aerially isolated from the main buildings, the only connexion being by covered way or bridge open to the air on each side. The wards are for ten beds each, and are similar to the general wards, except that a larger proportion of space is provided per bed. A small ward for one special case adjoins each ten-bed ward.

The buildings are erected of stock bricks with best quality facings relieved by strings of moulded white Suffolk bricks. The heads and sills of windows, plinths, &c. are of Portland stone. This stone is used with somewhat greater freedom in the façades of the administrative and official blocks. Internally, the walls of corridors, kitchens, sanitary annexes, &c. are faced with tinted glazed bricks to dado height. The wards have Keen's cement dadoes, all angles being rounded. The main corridors and other parts have marble mosaic paving. Granolithic paving is used in the administrative block. The floors of wards generally are of pitch pine, polished. The joinery generally is of pitch pine, varnished, the panels being specially selected figured wood.

The buildings have been erected, from the designs and under the superintendence of Messrs. Giles, Gough, & Trollope, the architects, of Craven-street, Charing Cross, by Mr. Thomas Rowbotham, of Birmingham. The electric lighting has been carried out by Messrs. Calvert & Co., of Manchester. The heating, cooking, and machinery and engines by Messrs. Z. D. Berry & Sons, of Westminster.

Correspondence.

To the Editor of THE BUILDER.

THE NEW STREET FROM HOLBORN TO THE STRAND.

SIR,—In your last issue you publish letters respecting the above new street and—most opportunely—Mr. Hennings's paper on the "Treatment of Angles in Street Buildings," the illustrations which accompany the latter providing many splendid object lessons for the London County Council if it wants to know what to avoid in its projected new street.

Mr. Hennings strove to show how best to treat a building erected on a corner site having an acute angle, and the examples he has collected prove pretty clearly that the problem is almost an impossible one under ordinary circumstances.

We all know only too well the "pound of cheese" kind of building which these sites produce, but the exasperating thing about it is that with a little more care and knowledge in laying out a new street most of these impossible sites need never be created, and that is why I venture to trouble you.

We may take it that the general lines of the new street are settled, but in detail I hope there is yet time for emendation. More of these awkward corner plots appear on the plans I have seen, and I venture to state that it is very little use inviting architects to design blocks of buildings on misshapen plots of land.

One of these diabolical plots is shown about where the *Morning Post* offices now stand, and, unless this is altered, on crossing Waterloo Bridge one will be confronted by a narrow *bull-nosed* pile of buildings, somewhat similar to Mr. Hennings's illustration No. 15 (see the *Builder* for March 3). Of course it may have an extra turret or two, and the carving and marble shafts may be of finer quality, but of dignity there can be none. One more abortion will have been added to our street architecture, and one more example of the terrible want of thought which characterises the laying out of our new streets will be only too evident.

One often wonders who it is who really *designs* our new streets—the results are so remarkable! And yet a little judicious modification would often turn what is left as a blot on their plan into quite an effective arrangement, often, too, without any extra cost whatever.

Even at the eleventh hour I hope it is not too late to thus modify, in detail, the plan of this great new street, which, on the whole, is laid out on really fine lines. The London County Council is evidently anxious to produce the best result it can, and I am sure our best thanks are due to them for approaching the Institute in the matter.

To insure good buildings, however, we must have good sites, laid out in such a way that fine blocks of buildings naturally rise out of them. Awkward plots must mean awkward buildings, so I hope that the London County Council, while proceeding with its commendable desire to obtain the best designs it can for the buildings on the new street, will first amend the setting out of many of the angle sites and so vastly facilitate the great object it has in view.

LEONARD STOKES.

"FIRE-RESISTING CEILINGS."

SIR,—Referring to the letter from the Secretary to the Mural Decorations Syndicate, Limited, in which he says that metal lathing has the "same disqualifications which iron joists, stanchions, and girders have"—*i.e.*, *vide* his previous sentences, "Iron is liable to expand with heat, and to throw off in the process of expansion any protection like concrete," &c. The co-efficients of expansion for iron and cement were found by MM. Durand Clay and Debray, from an elaborate series of experiments, to be ·000013 and ·000135 respectively, so that it will be seen that the expansion of the iron and cement can have very little to do with the plaster being thrown off.

There is, however, always a difficulty in getting plaster to adhere to a large plane surface, whether of iron or any other metal, or even of wood, and therefore the numerous devices for forming a key for the plaster, or, in other words, breaking up the surfaces to be plastered as much as possible. This was aimed at in our metal lathing ("Jhilmil") in which the largest plane surface unsupported by a pocket or aperture through which the plaster can project to the other side of the lath, so forming a key, is under one square inch.

The experiments we made with our lath go, we think, to prove the truth of what is before stated; as in 1893, when we tested it for its holding power, we took some of the plastered samples and heated them on a coke fire, plaster downwards, until the metal was red-hot. Some we allowed to cool gradually, and some were plunged into cold water. Ordinary plaster, granite plaster, and some others were tried in this way, and in every case the plaster remained intact, the only damage being that the facing coat of fine plaster became detached from the body coat.

We have a few of these samples still by us, though now rather the worse for wear, but we shall be pleased to show them to your correspondent if he cares to see them; and we think that the results of our experiments show that Mr. Marsland was not far wrong in his conclusions.

HAYWARD BROTHERS & ECKSTEIN, LIMITED.

THE LATE MR. JOHN GILES.

SIR,—In your last number there is a notice of the decease of the late Mr. John Giles, together with a short notice of his works, which probably you will permit me to supplement, as I knew him intimately in the early sixties of the present century. Mr. Giles came of a Lincolnshire family, and was articled to Messrs. Bellamy & Hardy, architects, of Lincoln. I knew him some time in 1862, and joined him professionally in the early part of 1863, when he carried out the "Langham Hotel," Portland-place, and soon afterwards the "Salisbury Hotel," Salisbury-square, Fleet-street, also the "Richmond Hill Hotel," as then named, although now, I believe, it is known as the "Mansion Hotel," Richmond Hill, Surrey; and amongst other works a mansion for the late Mr. W. Edgecumbe Rendell, at Wimbledon; another mansion for the late Mr. Charles Price, near Gloucester; also a residence at Crowborough, near Tunbridge, for the late Mr. W. Hudson; and Christ Church, Gipsy Hill, and vicarage. When the Metropolitan Asylums Board was constituted, he carried out the Leavesden Asylum, in Herts; the Caterham Asylum, in Surrey; and the St. Pancras Infirmary, at Highgate; and also, in conjunction with Mr. Lewis Angell, the Stratford Town Hall, besides other minor works. About this time I started in practice on my own account, but shall always entertain a high regard for his general urbanity and kindliness. His strong point was planning and arrangement in the days I was associated with him.

EDWARD POWER.

97, Queen Victoria-street, E.C.

TREATMENT OF STREET ANGLES.

SIR,—In the paper read by Mr. Hennings at the Architectural Association on the treatment of angles in street buildings, I am credited with being the architect of what he calls a unique feature in a building at the angle of Dowgate Dock and Cousin-lane; an honour, however, which does not belong to me.

DOUGLASS MATHEWS.

The Student's Column.

DETAILS OF STRUCTURAL IRON AND STEEL.

9.—THE PERFORATION OF PLATES.

SEEING that the joining together of iron and steel by means of welding is only permissible or practicable in the case of bars and rods, and that other methods mentioned in the last chapter are inapplicable, except for very thin plates, we have to look elsewhere for a mode of connecting such sections as are commonly used in constructional work. Some forms of material may be placed so that the edge of one piece overlaps the edge of another, and the two can then be joined by the insertion of rivets, bolts, pins, or similar fastenings. There are, however, some varieties of structural iron and steel—I-joists, for example—which cannot conveniently be caused to overlap in any approved manner, and any two pieces which it may be necessary to connect must be laid end to end and held fast by the aid of flat plates, rivetted or otherwise fixed to the flanges or webs of the two separate pieces. This method of procedure introduces a new element for our consideration, namely, the effects of perforation upon the material.

It should be remembered that joints, where perforation of plates or bars is necessary, are not all of the same class; some are intended to make rigid connexions, whilst others are designed to permit a certain amount of movement about a fixed point. It is not needful for the moment that we should enter upon detailed consideration of these two forms of joints, but it will be advantageous that some features should be pointed out which are common to both kinds. The strength of any joint between two pieces of metal, which have been perforated and are held together by tranverse fastenings, largely depends upon two essential factors (*a*), the tensile and compressive strength of the material, and (*b*) upon the shearing and tensile strength of the fastening, whether this be a rivet, a bolt, or a pin. We already know from tables in Chapter 7 what is the average unit-strength of iron and steel, but have now to ascertain in what manner and degree this is affected by manipulations incidental to the process of joint-making. To begin, it must be borne in mind that the total strength of a plate which has had a portion, or portions, removed by punching or drilling cannot be so great as that of an entire or untouched plate, although its unit-strength may possibly be greater. Next, it is evident that the ultimate strength of any joint should be directly governed by the resisting power of the transverse fastenings to shearing stress. As a matter of fact, the case is not expressible in quite such simple terms, for there are several disturbing elements tending to qualify results from case to case. The particular manner in which holes are perforated has much to do with the question of strength, and a similar effect is the outcome of differences in the actual performance of rivetting and bolting operations. We will first inquire what are the net results of perforation upon iron and steel plates so far as strength is concerned.

There are four methods of perforating metal plates, viz.:—(*a*) by punching; (*b*) by punching and annealing; (*c*) by punching and drilling to size; and (*d*) by drilling. Perhaps it may at first sight appear that there is nothing particularly interesting in connexion with the punching of a hole in a piece of iron or steel, but some remarkable phenomena are nevertheless involved. As formulated by M. Tresca, in a paper on "The Flow of Solids," three periods exist with regard to bodies under the influence of stress:—(1) the period of perfect elasticity; (2) the period of imperfect elasticity; and (3) the period of fluidity. In the first of these, as pointed out in Chapter 6, strain is proportional to stress; and in the second, strain increases more rapidly than the stress which produces it. The third condition, as defined by M. Tresca, is one in which a given force would continue to produce strain, or deformation, without limit—as may be observed in the drawing of lead. This period is said to be "more extended for plastic substances; it is more restricted, and will even disappear altogether for some vitreous or brittle substances. But it is perfectly developed, and extremely extended in the case of clays and of the most malleable metals." An exemplification of M. Tresca's theory will be furnished if a piece of plastic material be placed on a die and perforated by a punch. It will then be found that the thickness of the "burr," or piece punched out, will be less than the thickness of the original block as indicated in fig. 24. As it has been demonstrated that no increase of density takes place in the burr under such circumstances, it is evident that a large proportion of the metal is absorbed laterally into the block. In a case like this a very distinct side movement of the particles of the metal commences before direct severance occurs. This fact was established some years ago by Messrs. Hooper & Townsend, of Philadelphia, when punching material $1\frac{3}{4}$ in. thick with a $\frac{1}{2}$-in. punch. The thickness of the resulting burr was only $\frac{13}{16}$ in., and the greater part of the difference represented side flow. For thinner plates the flow is proportionately less, but it always exists. In an experiment by M. Tresca, several piled-up pieces of lead were punched through, and when the resultant burr was taken apart it was found that the discs near the bottom were nearly of the same thickness as the original metal, whilst the upper layers were considerably thinner. Although more recent experience indicates that the effects of punching a piled specimen are not precisely identical with those experienced in the case of a solid block, the experiment cited will serve to confirm the statement that of the metal which flows laterally into a block during punching, the greater part comes from the higher layers of the material, and, consequently, compression is most considerable near the cut edge of a perforation. This part of the metal is in a state of internal compressive stress, and the thicker the plate which has been punched the greater must be the injury caused. One effect of punching is to increase the unit-tenacity whilst diminishing the ductility of that part of the metal immediately affected, and this result is particularly evidenced if the holes be near together. This alteration of strength is similar in kind to that mentioned in Table XVIII., and is an illustration of the manner in which the elastic limit and yield point may be raised. It was shown in Chapter 5 that like results follow overstrain of any kind, but that the original qualities of the metal may be restored by annealing. Consequently, the student will be quite prepared to hear that plates which have been punched are frequently annealed for the purpose of removing the prejudicial effects produced. There is a distinct want of uniformity in records bearing upon the relative strengths of entire and punched plates, and the reason is most probably to be found in the fact that early experiments were not conducted with sufficient exactitude in respect of details. As a general rule, it will be safe to assume the loss of tenacity resulting from punching to be as follows:—

Thickness of plate...	$\frac{1}{4}$ in.	$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	1 in.
Loss per cent.	6·0	8·5	17·6	25·0

Making further inquiry, we find that there are various conditions which may affect the strength of punched plates, and as it is desirable that we should study cause as well as effect, we will now briefly refer to the conditions in question, and to their modifying influences upon strength.

(1) As shown above, the thickness of a plate is directly responsible for a difference of tenacity, but when plates are under $\frac{1}{2}$ in. in thickness the loss due to punching is not a very serious item, and many authorities are inclined to permit such material to be punched, if it is to be used in ordinary structural work. (2) The width of a plate has an important bearing upon the question of punching, and we shall best understand this if we mention the exact effect produced when a plate has been perforated in this manner. It has already been stated that the metal immediately around the punched hole is compressed, especially in the cut edge, but the injury, as shown by the investigations of M. Barba, M. Considere and others, is confined to a narrow zone of about $\frac{1}{8}$ in. wide. If this ring of metal be cut out, it will be found to be extremely brittle and incapable of bending, and assuming the holes to be spaced close together, the annuli of hardened metal will nearly touch each other, and the tenacity of the whole plate between the holes will be considerably raised. In this way the strength of metal in narrow bars full of holes becomes much increased, but as the effect is to create a brittle material out of a ductile one, the element of danger is distinctly perceptible, and the architect should never consent to the use of such bars unless perforation be performed without altering the natural characteristics of the material. When the bars are wider, a totally different state of things is observable, for the annuli of hardened metal do not meet, and on the application of stress, they do not stretch so much as the intermediate parts. Consequently, the annuli are ruptured before the intermediate metal has come fully under the influence of tension, and the unit-strength of the perforated plate is, therefore, less than that of an entire plate. (3) Upon the quality of the metal very much, of course, depends. Puddled iron plates exhibit varying diminution of strength according as the textile pull is applied longitudinally or transversely; the difference averaging about five per cent. Hard metal is apt to develop cracks when punched, but mild steel, on the other hand, is sometimes improved in strength by punching. In the case of very mild Landore steel not exceeding $\frac{3}{8}$ in. thick, it was demonstrated by Professor Kennedy that punching actually caused an increase of unit-strength; and the late Sir William Siemens always maintained that punching did not injure mild steel, although experimenters with other brands found the reverse to be the case. The figures quoted by Professor Kennedy show an increase of tenacity in $\frac{1}{4}$-in. plate of 1·2 per cent., and in $\frac{3}{8}$-in. plate of 8·0 per cent. Excess of this kind, however, must be variable, and its amount cannot be relied upon. (4) Strength is considerably affected by the form and condition of the punch and die. Bad tools may cause great injury to the metal, and develop weakness along a line of rivet-holes. Punches for forming rivet-holes do not vary much in shape, as may be seen from fig. 25. A centre-point enables the centres of holes marked on the plate to be readily found, and tends to ensure greater accuracy than is obtainable with a plain-faced punch. In every case the punch is slightly larger in diameter at the face than in the shank, and the face is usually concave, so that a clean cut may be obtained. The resistance of metal to punching is governed by the extent of surface acted upon, and by the diameter of the tool. Experiments have shown that resistance to punching is practically of the same value as resistance to tensile strain, and the force (F) required in any given case may be found by the following rule:—

$$F = \textit{area of hole} \times \textit{thickness of plate} \times \textit{tensile strength of material.}$$

A close die, producing a cylindrical hole, causes greater loss of strength than an open die, by which a conical hole is made. If the taper of the hole be $\frac{1}{16}$ in., the loss of strength will probably be over 17 per cent.; but if the taper be increased to $\frac{1}{4}$ in., the loss ought to be little more than 12 per cent.; and a further increase of taper to $\frac{1}{2}$ in. will raise the loss to about 24 per cent. It is not advisable that the punch should fit the die without clearance, nor that the clearance should be excessive, as illustrated in fig. 26, for in either case the result will be prejudicial.

We can now with advantage consider how the weakening effects of punching can be removed by annealing, drilling, and drilling. There is ample testimony to the fact that annealing will entirely remove the prejudicial effect of punching, and many engineers stipulate that this operation should be performed

Fig. 24. *Fig. 25.* *Fig. 26.*

upon all plates in which holes have been punched. Annealing is done by raising the temperature of the plate to a dull red and covering it with ashes or sand until cold, but a better plan is to leave the plate in the annealing oven until it is cold. The practice of punching holes about ¼ in. less in diameter than the required size and then boring out the remaining metal is distinctly advantageous, as also is the practice of punching and countersinking. In either case the unit tensile strength of the plate may be more than restored, but as neither operation removes the whole of the hardened metal, the plate is not left with ductility equal to that in punched and annealed or in drilled plates.

Drilling is always to be recommended as the best mode of effecting the perforation of plates, and considering the great advances which have been made in connexion with tackle available for the purpose, it is probable that the operation can be performed almost, if not quite, as economically as punching. The effect of drilling is clearly to increase the unit-strength of metal between the holes, and according to Professor Kennedy, the explanation of this apparent paradox is that contraction of area at the hole may alter the usual flow of the metal when under severe stress, rendering it more uniform than it would be in an unperforated plate, so that the stress can be more evenly distributed throughout its area. Mr. Kirkaldy attributed the phenomenon to suppression of elongation, and consequently of contraction of area. This theory is shared by other experimentalists, to whose work we need make no detailed reference, for the fact itself is really sufficient for our purpose. Before finally leaving the consideration of perforated plates, we append a table showing clearly the relative merits of each method of making holes such as are incidental to joints and connexions.

Table XXIV.—Strength of Perforated Steel Plates (Board of Trade).

Condition of plate.	¼-in. plate.		½-in. plate.		¾-in. plate.		1-in. plate.	
	B	C	B	C	B	C	B	C
Unperforated	30·17	53·3	27·69	50·0	27·84	39·4	28·17	38·8
Punched	28·22	24·1	25·33	19·1	22·94	13·0	21·26	5·4
Punched and annealed	31·6	41·3	29·39	37·4	29·31	30·7	29·12	24·7
Punched and drilled	31·23	24·0	30·86	28·9	28·81	19·4	29·15	15·9
Drilled	31·46	36·6	31·37	32·7	30·23	32·1	28·43	33·2

B—Ultimate strength in tons per square inch of net section. C—Contraction per cent.

Correction.—The figure numbers quoted in the text of Chapter 8 as *18* to *22* should be renumbered *19* to *23*, so as to correspond with the diagrams, of which fig. 18 represents an entire bar.

GENERAL BUILDING NEWS.

BROMHAM CHURCH, WILTS.—Towards the end of last year, the spire and tower of this interesting old church were found to be in a dangerous condition, and the weather entered through the joints in an alarming manner, owing chiefly to the extensive use of iron cramps which had cracked the thin stones of the spire in many places. The whole has been carefully repaired, without rebuilding any part, at a cost of 300*l.* The architect was Mr. Harold Brakspear, F.S.A., of Corsham, and the contractor Mr. H. Hoskings, of Hungerford. On the south side the chancel is the beautiful fifteenth-century Baynton Chapel, belonging to Captain Spicer, of Spye Park, which is about to be repaired in the same conservative manner by the same architect and contractor.

ENLARGEMENT OF WAKEFIELD CATHEDRAL.—On the 2nd inst., a meeting of the Walsham How Memorial Committee was held at the Church Institution at Wakefield, when the contract of Messrs. Armitage & Hodgson, of Leeds, for the enlargement of the cathedral, was again considered, and it was decided to ask them to execute the work throughout in Nethertone stone. Their estimate for building the crypt and two vestries under a separate contract was approved. The estimate for the crypt works out at 8,843*l.*, whilst that for the whole of the building stands at 25,100*l.* The contractors will enter upon their work on the 19th inst., and they undertake to complete the first portion (the crypt and vestries) in about eighteen months. The second portion (the whole of the work if continued under one contract) will be completed in September, 1902. A sub-committee recommended that a design by Mr. Forsyth, of London, the sculptor, of a recumbent effigy of the late Bishop Walsham How should be accepted, and their recommendation was adopted. The cost of the effigy will be 750*l.*

REOPENING OF NORBURY CHURCH, DERBYSHIRE.—The Church of St. Mary's, Norbury, was reopened recently after restoration. The roofs of the nave and aisles have been replaced by new ones of oak, the carving work, copied from the old roofs, having been executed by Mr. Bridgeman, of Lichfield. The west walls of the nave and aisles, with the windows, have been rebuilt, and also the whole of the south chapel, part of north and south clearstories, and the upper part of north aisle walls. The parapet of the tower has been reset. The floor of the church has been lowered to its original position: under the seats it is of wood blocks, and of local stone in the aisles. The builder was Mr. W. Gould, of Tutbury. The lead work to roofs and the flagging was the work of Messrs. T. Turner & Sons, of Burton-on-Trent. Messrs. Naylor & Sale, of Derby, were the architects for the restoration.

LYCH GATE, &C, BASSALEG CHURCH, MONMOUTH.—A new gate house, lych gate, and boundary walls have been erected at this church. Mr. C. B. Fowler was the architect.

PROPOSED RESTORATION OF ST. PAUL'S CHURCH, BRISTOL.—It is proposed to restore the interior and modernise the seating of St. Paul's Church, Portland-square, Bristol. Plans have been prepared by Mr. G. H. Oatley, architect, of Bristol.

RESTORATION OF WERRINGTON CHURCH, NORTHAMPTON.—The chancel of Werrington Church was re-opened, after restoration, on the 20th ult. The south and east walls have been rebuilt, no more new stone being introduced than was necessary. The east end of the north aisle has been rebuilt, and will be used as a vestry. The oak roof is entirely new. The builders were Messrs. J. W. Aspittle, Werrington, and B. Letall, Walton. Mr. J. C. Traylen, of Stamford, was the architect.

WESLEYAN CHAPEL, RUSHDEN.—A new Independent Wesleyan Chapel was opened at Rushden on the 22nd ult. Messrs. Preston & Wilson, of Rushden and Kettering, were the architects; and Messrs. Dickens Bros, of Rushden, the builders. The front of the building is of red pressed bricks, with Weldon stone dressings. The chapel is 45 ft. by 65 ft. 6 in., a gallery running all round. The heating apparatus was supplied by Mr. Ambrose Marriott, of Higham Ferrers. The joinery work was executed by the Rushden Joinery Works. The cost, including organ by Messrs. Martin & Coate, of Oxford, was 2,800*l.*

CATHOLIC SCHOOLS, BELFAST.—St. Malachy's Schools, in New Lodge-road, Belfast, were opened on the 12th ult. The buildings are two stories in height, and have a frontage of 80 ft. to New Lodge-road, and a depth of 28 ft. The playgrounds, covering an area of 4,500 sq. ft., are completed in concrete and provided with covered playing spaces. The accommodation is for 500 children. Separate entrances for boys and girls are provided, the one for the former giving access to the ground floor, which has a large central school-room, flanked by class-rooms and galleries. The upper floor, which is to be used by the girls and infants, is arranged in the same manner. A pitch-pine staircase leads from the hall at the girl's entrance to the first floor. Externally, the building is relieved by cut-stone work and ornamental brickwork. The architect was Mr. J. J. M'Donnell, and the builder Mr. John Fagan.

BOARD SCHOOL, BARRY, GLAMORGAN.—The new Board school buildings in Hannah-street, Cadoxton-Barry, were opened on the 17th ult. The schools accommodate 1,300 scholars, exclusive of the accommodation given in the manual instruction school. Messrs. Jones, Richards, and Budgen were the architects.

ADDITIONS TO BOARD SCHOOL, LAMBETH.—Additions, which include four new class-rooms, cloak-rooms, a demonstration-room, and a swimming bath, have been made at the Marlborough-street Board School, New Cut. The contractors were Messrs. Leslie & Co., Mr. T. J. Bailey was the architect, and Mr. Chambers was the clerk of works; Mr. Millington carried out the heating. The cost of the whole was about 23,000*l.*

NEW WORKHOUSE, ISLEWORTH, MIDDLESEX.—The foundation stone has just been laid of a new workhouse at Isleworth. The new building, which will cost about 100,000*l.*, has been designed by Mr. W. H. Ward, of Birmingham, Mr. J. Dorey, of Brentford, being the builder. The Guardians have secured about 16 acres of land at the back of the existing institution. The land is divided from the old workhouse, and the Board offices by the Union-lane, and is approached from the Twickenham-road by the carriage-way that leads to the existing buildings. Facing the end of this road will appear the entrance gates and porter's lodge, and close behind will be erected the receiving block, provided with dormitory and day-room accommodation for males and females. There will also be a disinfecting chamber, quarters for remand boys, the official block, master's quarters, and separate quarters for males and females, and for old and young. Then there are to be imbecile wards, workshops, laundry, bakery, chapel, &c. The new house will accommodate 550 persons, and there is plenty of room for extension when necessary. The general work is to be executed in grey stock-bricks, relieved with stone and dressings and red brick. Mr. D. T. Haylock is the clerk of works.

TEMPERANCE HOTEL, EXETER.—On the 5th inst. premises at 101, Fore-street, which have been secured by the Franklin Temperance Hotel, Limited, were opened. The premises have been much altered and added to. The ground story has been replaced by a polished mahogany front with two circular windows, between which is the restaurant door, while on either side are the hotel and assembly-room entrances. The hall is calculated to accommodate from 250 to 300 persons, and has an ante or committee room attached, while there are means of entrance and exit from Smythen-street as well as Fore-street. The restaurant is well ordered. On the first floor will be found a tea-room, dining-room, and commercial-room; the latter overlooks Fore-street. On the second floor there are fourteen bedrooms. In the basement are kitchen and larders with white enamelled wall. There are also numerous stores. The architect was Mr. Harbottle Reed, of Exeter. The hotel is fitted with electric bells, speaking tubes, and telephones, while electric lighting has been installed throughout by Messrs. Brooking & Co. The general contractors have been Messrs Westcott, Austin, & White. The alterations and furnishings have cost roughly about 3,000*l.*

BUILDING ENTERPRISE, LEEDS.—The Report of the City of Leeds Central Estates, Limited, submitted at the annual meeting held at the registered offices, 5, Greek-street, deals with the development of the estates belonging to the company. The greater portion of the old buildings has been demolished, and the new street leading from Duncan-street to Kirkgate partly formed. Plans dealing with the whole of the property have been prepared, and the contracts for the new buildings, which involve an expenditure, apart from the site, of nearly 100,000*l.*, have been let to Messrs. Armitage & Hodgson, of Leeds. Mr. T. W. Cutler, of London, is the architect. The working out of the scheme, which comprises a new Bull and Mouth Hotel, a large emporium facing Briggate, and twenty-two shops in Kirkgate, New Central-street, and Central-road, has occupied the attention of the directors during the past twelve months. The work is to be pushed forward vigorously, and the greater portion of the scheme will be completed during the next twelve months.

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, BRIGHOUSE. — Mr. H. P. Boulnois, Inspector to the Local Government Board, held an inquiry at Brighouse on the 20th ult. into the application of the Brighouse Corporation for sanction to borrow a further sum of 24,267*l.* for the purposes of sewerage and sewage disposal. Evidence was given by Mr. A. M. Fowler, the engineer.

SEWERAGE SCHEME, FENHAM, NORTHUMBERLAND.—The Fenham Urban District Council have adopted a scheme for the main sewerage of the Fenham portion of Benwell and Fenham Urban District. The sewage will be conveyed to the Denton Valley and then to Scotswood, being ultimately discharged into the tidal river Tyne. The scheme has been prepared by Mr. Harry W. Taylor, C.E., of Newcastle, and is estimated to cost 11,500*l.*

DRAINAGE, SCALBY, NEAR SCARBOROUGH.—The Scarborough Rural District Council have sent up to the Local Government Board plans and estimates of a scheme of drainage for the villages of Scalby, Newby, and Throxenby, near Scarborough. If carried out it will entail a capital outlay of 10,000*l.* It has been prepared by Messrs. C. Gott & Co., of Bradford, and will carry the sewage from the village of Scalby into the sea, a distance of over 2,000 yards.

WATER SUPPLY, CASTLE RISING, NORFOLK.—Under the direction of Sir Redvers Buller, V.C., trustee for the estate, works have during the past year been carried out to supply this place with water. The supply of water is drawn from the river and raised by means of a turbine driving a set of three throw pumps; these deliver the water through a filter in a cast-iron rising main connected to the pipes in the village. A brick reservoir has been built on the high ground to the south of sufficient capacity to hold a supply in case of fire, and mains have been laid down to and throughout the village. Water is now laid on to the hall at present occupied by Lord Farquhar, and to the several houses and cottages by means of service pipes and standposts. Mr. Martin W. B. Ffolkes, of Westminster, acted as engineer in designing and carrying out the whole of the works, and

the fittings were supplied by Messrs. Ham, Baker, & Co., of Westminster.

WATER SUPPLY, FARINGDON.—The Local Government Board, having sanctioned the borrowing of 5,007*l.* for works of water supply for the town of Faringdon, the Rural District Council have instructed the engineer, Mr. George Winship, Assoc.M.Inst.,C.E., of Abingdon, to advertise for tenders for the necessary works.

STAINED GLASS AND DECORATION.

WINDOW, ST. MATTHEW'S CHURCH, BANKFOOT, BRADFORD.—A stained-glass window has been erected in the Church of St. Matthew, Bankfoot, Bradford. The subject is Christ blessing little children. The window was the work of Messrs. Wailes & Strang, of Newcastle.

WINDOW, PARISH CHURCH, SHIPHAM, SOMERSETSHIRE.—A stained-glass east window has been erected in the parish church of Shipham. The work has been executed by Messrs. Bell, of Bristol. The window is of three lights; the centre represents the Crucifixion, and the two sidelights St. John and St. Mary.

FOREIGN.

FRANCE.—The mural paintings by M. Humbert, in the Panthéon, have been uncovered, and the frieze executed by M. Cazin from the designs of Puvis de Chavannes will shortly be placed in position. M. Falguière's unfinished group in plaster, "Liberté Triomphant," is to be removed for the present.——The Hôpital de la Charité is to be pulled down and rebuilt on a site somewhere near the fortification lines at Paris.——A subscription committee has been formed at Lunéville with the object of erecting a monument to the memory of Messrs. Erckmann and Chatrian. M. Bartholdi is to be the sculptor.——M. Platel has been elected president, for 1900, of the Société des Architectes of Havre.——The Municipality of Marseilles has opened a competition for the erection of a technical and industrial school there.——The Municipal Council of Paris has opened a competition for a fire-brigade barracks at Ménilmontant, at the angle of Avenue Gambetta and Rue Haxo.——There is to be an exhibition of the works of Watteau at the Ecole des Beaux-Arts, from May 17 to June 13.——M. Sauger has been appointed "Architecte-Voyer-en-Chef" to the Municipality of Paris.——The death is announced, at the age of sixty-nine, of M. Henry Monceaux, curator of the Library and Museum at Auxerre, and author of a number of works on the history of art.——The death is announced, at the age of 74, of M. Guilbert Martin, a worker in glass and mosaic who gave a great deal of impulse to the study and production of modern mosaic work in France. He carried out the mosaic work at the Panthéon and at the Escalier Daru in the Louvre. He had established a school of mosaic workers at his manufactory at St. Denis.——M. P. L. Beaudin, architect, of Bordeaux, has died, at the age of 59. He was a pupil of Hippolyte Lebas and of the Ecole des Beaux-Arts.

UNITED STATES.—Contracts have recently been let by the Albany and Hudson Railway and Power Company for the erection of a large power house, and the construction of several bridges required in the extension of the railway from Albany to Hudson. One of the viaducts to be made will be about 2,000 ft. in length.——An influential meeting has recently been held in New York to further the proposal for the erection of a national cathedral at Washington, and a site has already been purchased at a cost of $245,000.——Experiments are being made at Milwaukee and St. Louis with portable school houses. Each house will accommodate fifty-five children; it is made in sections, secured together with bolts, so that it can be taken down, removed, and set up anywhere on such foundation as may be available. It has six windows, and the end wall is made into a blackboard. These houses have been designed to suit the requirements of the shifting population in the neighbourhood of the two cities mentioned.——The Case Memorial Library, Auburn, New York, is now approaching completion. It was the subject of a large competition in 1896. The architects are Messrs. Carrère & Hastings, of New York.

AUSTRALIA.—In consequence of the disastrous floods which so frequently take place at Brisbane, Colonel Pennycuick, R.E., was recently commissioned to report on the matter. He suggests that the evil may be mitigated by the construction of a flood-regulating reservoir, to be constructed at a point some seventeen miles below the junction of the Stanley and Brisbane rivers, at an estimated cost of 1,300,000*l.*——Some exhaustive experiments have recently been made in Bombay, testing the relative strengths of (Australian) karri wood and teak; they resulted in favour of karri. Both tensile and crushing strengths were carried out.

FAR EAST.—The Seoul-Chemulpo railway (Corea), the construction of which commenced in 1897, is now nearing completion; whilst surveys have been made for another between Seoul and Fusan, under a contract signed between the Corean and Japanese Governments.

MISCELLANEOUS.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.—By a unanimous vote of the Council of the Royal Institute of British Architects, Mr. Edward Augustus Ould, President of the Liverpool Architectural Society, has been elected a Fellow of the Royal Institute.

EXCAVATIONS IN GREECE.—Professor C. Waldstein, Slade Professor of Fine Art at the University of Cambridge, delivered on the 1st inst., at the Royal Institution, the first of three lectures on "Recent Excavations at the Argive Heræum." The site of the sanctuary of Argive Hera, or Juno, as the Romans called her, was, he said, situated on the north-eastern side of the Argive plain, between the ancient cities of Mycenæ and Tiryns and opposite the city of Argos. It was built by Eupolemus, 420 B.C., and contained the famous gold and ivory statue of the goddess by the sculptor Polycleitus. The merit of having identified the site lay with General Gordon, of Cairness, who, while in the service of Greece and in command of troops at Argos, accidentally discovered it in 1831. By the exercise of his own energy and the expenditure of limited means, he, five years later, made some excavations, which, however, did little except confirm the belief that ancient remains were beneath. In 1854 some few further discoveries, including an earlier temple, were made, and then nothing further was done till 1891. In 1892 he (the lecturer) was selected by the American Archæological Institute and School of Athens to direct and superintend the systematic excavation of the entire site. The excavations not only laid bare the whole of a second temple of the fifth century, but also revealed the remains of nine other buildings, belonging to various periods, within the sanctuary, and manifest and undeniable traces of an earlier temple destroyed by fire. Below these foundations and in various places were found undoubted traces, in the numerous objects on the walls, of a state of civilisation precedent to that of the period of the earlier temple. They antedated the Homeric period, and supplied archæological evidence which confirmed the opinion that they could now restore to ancient Greek history facts dating back at least 300 years, supplying the beginnings of Hellenic civilisation and art long before the Mycenæan period, and certainly as early as the twentieth century B.C.—*Standard.*

THE HOUSING PROBLEM AND UNDERGROUND ROOMS.—Dr. A. Wynter Blyth, Medical Officer of Health for Marylebone, points out, in his monthly report, the conditions under which underground rooms may be occupied—conditions which, he says, most of the kitchens in Marylebone do not fulfil. According to Section 96 of the Public Health (London) Act, the rooms (1) must have at least 3 ft. of their height above the surface of the street or ground adjoining or nearest to the room. (2) Every wall of the room must have a proper damp-proof course. The area must be at least 4 ft. wide in every part, and extend the whole length of the room. The area must be 6 in. below the level of the floor. If the room does not fulfil these and other conditions, it is an offence to let it or to occupy it "separately." On the other hand, it is no offence to let it or occupy it in conjunction with other rooms on any of the floors above.

IMPROVEMENT SCHEME, HARROGATE.—At the monthly meeting of the Harrogate Town Council on the 12th ult., the Mayor (Dr. J. A. Myrtle) presiding, a scheme of improvement was approved. For some time past the Corporation have had under consideration the necessity of improving the entrance to the Bogs Valley Gardens, Cornwall Road, at Well Hill, and also the question of restoring or rebuilding the Royal Pump Room. In connexion with this matter, negotiations have taken place for the purchase of the adjoining property (Rose Villa), and a special committee considered the desirability of purchasing the whole of the property on the west side of Cornwall Road, from the Valley Gardens up to and including Benwell House. As the result, the Committee recommended the Corporation to purchase the whole of this property for the purpose of improving Cornwall Road, and if they cannot acquire the property by private treaty, that application be made to the Local Government Board for a Provisional Order to enable the Corporation to put in force the Lands Clauses Consolidation Act, and purchase the property compulsorily. The Council adopted the recommendation without discussion.

PEABODY DONATION FUND.—The thirty-fifth annual report of the trustees of the Peabody Donation Fund states that the net gain of the year, from rents and interest, has been 35,183*l.* 17s. 2d. The sum given by Mr. Peabody was, in 1862, 150,000*l.*; in 1866, 100,800*l.*; in 1868, 100,000*l.*; and received by bequest from him in 1873, 150,000*l.*, making a total of 500,000*l.*; to which has been added money received for rent and interest, 791,351*l.* 8s. 6d., making the total funds on December 31 last 1,291,351*l.* 8s. 6d. The capital expenditure on land and buildings to the end of the year was 1,285,107*l.* 2s. 7d. The whole of the repairs for the year, amounting to 12,688*l.* 1s. 2d., have been charged to income as formerly. At the end of the year the trustees had provided for the artisan and labouring poor of London 11,367 rooms besides bath-rooms, laundries, and lavatories. These rooms comprised 5,121 separate dwellings—viz., 100 of four rooms, 1,767 of three rooms, 2,412 of two rooms, and 842 of one room. The two new blocks of buildings at Stamford-street, containing thirty-six rooms each, were not quite completed at the end of last year, but are now fully occupied. A site of nearly 20 acres near Brockwell-park has been acquired, but nothing has yet been done to develop this property. The average weekly earnings of the head of each family in residence at the close of the year was 1*l.* 3s. 0½d. The average rent of each dwelling was 5s. 0½d. a week, and of each room 2s. 3½d. The rent in all cases includes the free use of water, laundries, sculleries, and bath-rooms. The mean population during the year was 19,152, showing a density of 702 people to the acre, or nearly twelve times that of London. The birth-rate for the year reached 32·8 per 1,000, which is 3·4 per 1,000 above that of all London for the same period. The death-rate, including the deaths of sixty-eight inhabitants of the buildings who were removed to hospitals, was 16·7 per 1,000., which is 3·1 per 1,000 below the average of London. The infant mortality was 127·2 in each 1,000 births, or 40·2 below that of London.

SOUTH HANTS INFIRMARY.—We are asked to mention that the marble mosaic floors mentioned in the description of this building in our last issue were supplied by Messrs. Diespeker & Co., who also supplied the similar floors for the Isolation Hospital at Enfield.

A BUILDING SITE IN FLEET-STREET.—The Drapers' Company have resolved to let by auction (at an early date) on building leases for a term of eighty years the two sites now occupied by Nos. 180-1, Fleet-street, and Nos. 140-4, Fetter-lane, covering a total area of about 3,400 ft. superficial.

CAPITAL AND LABOUR.

PLASTERERS' DISPUTE, LONDON.—Negotiations have been in progress between the London Master Builders' Association and the National Association of Operative Plasterers as to new working rules but, we are informed, while the negotiations were in progress, the operative plasterers in many instances called out their men, owing to the inability of the Operatives' Union to agree to a rule which had for its object the prevention of unnecessary friction and stoppage of work. The rule provided that an outside arbitrator might award damages against either masters or men in case of breach of rules. Many men left work on Monday.—Representatives of the N.A.O.P. were invited to meet representatives of the Central Association of Master Builders on Thursday, to discuss the differences. We hope that the matter will be settled satisfactorily.

DISPUTE IN THE WOLVERHAMPTON BUILDING TRADE.—A dispute has arisen in the building trade of Wolverhampton. Some five months ago the operatives in the carpentry trade gave six months' notice for 1d. per hour advance upon their wages, and it is said that the action on the part of the employees caused the building trade to become somewhat depressed, and, in some instances, the leading contractors lost large contracts owing to the fact that they had to tender in face of the demand made by the carpenters. At any rate, the building and allied trades in Wolverhampton at the present time are now in a very flat condition, and the masters think it warrants them in resisting the raising of wages in any department. The carpenters have for some time been earning 8½d. per hour, and, besides asking for the additional penny, they desire an alteration in the working rules. At present the stopping time for Saturday is one o'clock, and they request the masters to alter that hour to noon; but the employers, in resisting this say that it would be impracticable, as the bricklayers, plasterers, painters, &c., leave off at the later hour. A joint meeting of the masters and the men has been held at Wolverhampton. The President of the Employers' Association (Mr. T. Skett) was in the chair. As to the alteration of the hour of leaving off time on Saturday the men's representatives gave way. It has been the custom for carpenters working after 6 p.m. to have additional quarter time for over-work, and now from April 1 they demand that overtime shall commence at 5 p.m. This alteration, however, the masters are determined to oppose to the utmost. The men also ask for such alteration to the rules that all apprentices must be bound for a term of not less than five years, and no boy over sixteen years of age can become an apprentice. This the masters say is most arbitrary, and is intended to lessen the number of apprentices, and will be resisted strongly. The men also ask for a Conciliation board of five employers and five men's representatives.

PERTH MASONS' WAGES.—It will be remembered that at a recent meeting of the Perth master masons it was agreed, in view of the steady decline in trade, to inform the operative masons that it was the intention to reduce the present rate of wages by 1d. per hour, viz., from 9½d. to 8½d. for builders, and from 9d. to 8d. for hewers. The masters communicated this decision to the men about a fortnight ago, and since then the operatives have had the matter under consideration, with the result that they are inclined to stand out for the

present rate of wages being retained. There is, however, as yet no friction between the employers and employees, and it is probable that the matter will be settled amicably, as the men in their communication to the masters have expressed their willingness to have a conference on the subject on an early date. It is proposed that five representatives should be present from either side at the conference.—*Dundee Advertiser.*

ABERDEEN JOINERS AND PAINTERS.—The endeavours made to bring about an amicable settlement in the dispute in the joiner trade having failed, the operatives to the number of 700 struck work on the morning of March 1. The chief objection of the men is to the proposed reduction of wages to the extent of ½d. per hour, and both sides are reported to be determined not to yield, though some masters have re-engaged from thirty to forty hands on the old terms. In the painter trade all difficulty has been avoided by both parties agreeing to leave last year's by-laws unaltered.

SETTLEMENT OF DUNFERMLINE JOINERS' STRIKE.—The operative joiners have sent a deputation to all the employers, and offered to accept a reduction of the standard wages from 8½d. to 8d. They stated that if the penny reduction intimated were enforced the operatives would strike work. The employers agreed to compromise, and work has been resumed.

DUNDEE MASONS' STRIKE.—The situation in the strike of Dundee operative masons remains unchanged. By the concession of several firms to the demands of the men, and by the departure of numbers for employment out of the city, the strike roll is being gradually reduced, and there are now only about 350 off work.

LEGAL.

IMPORTANT DECISION UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Brady *v.* Cooper & Crane and Alfred Wright came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 3rd instant, on the appeal of Alfred Wright from an award of the County Court Judge of Nottingham in a claim under the Workmen's Compensation Act, 1897.

Mr. Clavell Salter, who appeared for the appellant, said that Wright, who was the employer, was a sub-contractor, and he appealed from the award of the County Court Judge directing that he should indemnify the other defendants, Messrs. Cooper & Crane. It seemed to the learned counsel that the question to be determined was covered by the decision of this Court in the case of Cass *v.* Butler (reported in the *Builder* of March 3) laying down that a sub-contractor was not an "undertaker" within the meaning of the Act. Messrs. Cooper & Crane, who were builders, contracted to build a house, making a sub-contract with Wright for the latter to provide and fix the tiles. The workman, J. A. Brady, was in the employ of Wright, and was injured while doing the tiling work, and died. His widow then took proceedings under the Act against both Cooper & Crane and Wright, alleging that both were "undertakers" within the meaning of the Act. The answer of Cooper & Crane was that Brady was not employed by them, but was employed by Wright, the contractor for the tiling work, which was not incidental to or formed part of the work carried on by Cooper & Crane. They also claimed alternatively to be indemnified by Wright against the amount of any award which they might have to pay. The answer of Wright was that he was not an "undertaker" of any work to which the Workmen's Compensation Act applied. Upon that the County Court Judge made an award against Cooper & Crane in favour of the widow, and adjourned the consideration of the question whether or not they were entitled against Wright to indemnity, but he subsequently held that they were.

Lord Justice Smith: Cooper & Crane did not appeal?

Mr. Salter: No, not against the finding in favour of the widow.

Lord Justice Smith: The only question is whether Cooper & Crane are entitled to indemnity against Wright. Wright says he is not an "undertaker"?

Mr. Salter: Yes. Section 4 of the Act says, "Provided that the undertakers shall be entitled to be indemnified by any other person who would have been liable independently of this section." The first part of Section 4 ran as follows: "Where in an employment to which this Act applies, the undertakers as hereinafter defined contract with any person for the execution by or under such contract of any work, and the undertakers would, if such work were executed by workmen immediately employed by them, be liable to pay compensation under this Act to those workmen in respect of any accident arising out of and in the course of their employment, the undertakers shall be liable to pay to any workmen employed in the execution of the work any compensation which is payable to the workman (whether under this Act or in respect of personal negligence or wilful act independently of this Act) by such contractor or would be so payable if such contractor were an employer to whom this Act applies." In the present case it was not denied that there was a liability to compensate the workman. Whoever was the "undertaker" had to compensate him. The County Court Judge held that Cooper & Crane were liable, but that Wright had to indemnify them. The question was whether Wright came within the definition of "undertaker" in Section 7 of the Act, which meant in the case of a building the person "undertaking the construction, repair, or demolition," and having regard to the decision of that court in the case of Cass *v.* Butler he (counsel) submitted he did not. What right Cooper & Crane might have against Wright under any other statute or at common law did not arise on the present appeal.

Lord Justice Smith asked Mr. Macaskie, counsel for the respondents, Messrs. Cooper & Crane, if he could distinguish the present case from that of Cass *v.* Butler.

Mr. Macaskie said that in the present case the learned County Court Judge found as a fact that the work undertaken by the contractor formed a substantial part of the contract itself.

Lord Justice Smith: He was a sub-contractor?

Mr. Macaskie: Yes.

Lord Justice Smith remarked that the Court had held that a sub-contractor did not come within the meaning of the Act.

Lord Justice Romer thought that the case of Cass *v.* Butler really covered the present case.

Lord Justice Smith referred to the cases of Cass *v.* Butler and Mason *v.* A. R. Dean, Limited (Moore & Sons third parties), reported in the *Builder* of February 24, and pointed out that there was a great distinction between the facts in the two cases In the latter case the work undertaken by A. R. Dean, Limited, was not purely decorative work, but the important fact was that that firm had been appointed to do the work by the building owner under powers reserved in Messrs. Moore & Sons' contract.

After some further discussion Lord Justice Smith, in giving judgment, said he thought the appeal must be allowed. The Court decided, in the case of Cass *v.* Butler, that a sub-contractor did not come within the meaning of the Act. Who was the "undertaker" in the present case? Who were the men who had undertaken the "construction, repair, or demolition" of the building in question? It was clear that Cooper & Crane were the "undertakers" and that Wright was a sub-contractor from them. In those circumstances Cooper & Crane were not entitled to indemnity from Wright. He should add that the decision in the present case would not prejudice any right which Cooper & Crane might have to sue Wright.

The other Lords Justices concurred, and the appeal was accordingly allowed with costs.

BUILDERS' SUCCESSFUL APPEAL IN CLAIM UNDER WORKMEN'S COMPENSATION ACT, 1897.

THE case of Rixsom *v.* Pritchard & Benwick came before the Court of Appeal, composed of Lords Justices A. L. Smith, Collins, and Romer, on the 3rd inst., on the appeal of Messrs. Pritchard & Benwick, builders, from the award of the County Court Judge of Dartford under the Workmen's Compensation Act, 1897, in favour of a workman employed about the demolition of a building in the High-street at Dartford.

Mr. Low, in opening the case for the applicant, said that the way in which the claim arose was this. In the High-street at Dartford there was a large public-house called the "Bull," next door to and adjoining which were two low buildings which had been used as shops. Some years ago the landlord of the "Bull" had acquired an interest in the shops, and in the one immediately adjoining the "Bull" had a communication made between that shop and the "Bull," and used it as an extra bar. After the landlord had acquired the shops, he determined to demolish them and erect on the site an addition to the "Bull." The height of the "Bull" was over 30 ft., but neither of the two adjoining shops had ever been that height. The accident happened on the site of the shop nearest to the "Bull," when Rixsom was wheeling away some rubbish along a plank and slipped and fell and was injured. The question to be determined was whether the applicant was at the time of the accident assisting in the demolition of a building 30 ft. in height within the meaning of Section 7, Sub-Section 1, of the Act. The County Court Judge held that as there was a communication between the structure which had been demolished and the "Bull," and that both buildings were used for the common purposes of the business of the "Bull," he was bound to find, as the "Bull" exceeded 30 ft. in height, that the man at the time of the accident was engaged in demolishing a building over 30 ft. in height. The County Court Judge awarded the applicant 11s. 9d. a week, being 50 per cent. of his wages during incapacity. At the time of the accident the building next to the "Bull" was pulled down to within 5 ft. or 10 ft. of the ground. The learned counsel contended that the accident did not happen during the construction, repairing, or demolition of a building exceeding 30 ft. in height, and that the award of the County Court Judge was wrong. The building which was being demolished was never part of the "Bull." They were always distinct.

Mr. Cyril Dodd, Q.C. (with him Mr. Bassett Hopkins), for the workman, contended that the finding of the County Court Judge was correct, and that the accident happened on or about a building which exceeded 30 ft. in height.

Mr. Bassett Hopkins argued that the "Bull" and the building adjoining were all one. The same business was being carried on in the part which was being pulled down as was carried on in the part which was left standing. There was evidence that the wall was a partition-wall, common to both portions of the building.

Lord Justice Smith said there was no evidence of that.

Mr. Hopkins said it had never been held by their Lordships that the building must be 30 ft. from the ground at the time the accident happened.

Lord Justice Smith: Certainly not. You need not put that as a knock-down.

Mr. Hopkins urged, with regard to the other aspect of the question, that it might clearly be said on the findings of the learned County Court Judge that the "Bull" was being repaired.

Lord Justice Smith: The case is that the man was engaged in pulling down a beerhouse at the time of the accident.

Mr. Hopkins: Well, the duty of the plaintiff was to give evidence as to what he was doing at the time of the accident.

Lord Justice Smith: There was no evidence before the Court that the man was repairing the wall.

Lord Justice Smith, in giving judgment, said that the question to be determined was whether or not upon the learned County Court Judge's notes there was any evidence that at the time the applicant met with the accident there was a building 30 ft. in height being demolished. That was the whole question they had to try. His Lordship then stated the facts, and said that in his opinion, upon the learned County Court Judge's notes, there was not a building of that height being demolished. It was clear from the plaintiff's own evidence that they were demolishing the two small shops, and were not demolishing the "Bull," which was over 30 ft. high, at all. There was not a rag of evidence that any part of the "Bull" was being pulled down at all. How on earth could the County Court Judge say that at the time of the accident there was demolition going on of a building over 30 ft. high? There was no evidence of that at all. The learned County Court Judge thought that, as there was a communication between the two buildings, that made them one, but that fact did not make the lower building part of the higher. The County Court Judge also seemed to think that, as the same business was carried on in both buildings, it made the buildings the same. His Lordship thought that the learned County Court Judge was wrong in his conclusion, and that the appeal must be allowed with costs.

The other Lords Justices agreed.

WEST HAM CENTRAL CHARITY BOARD *v.* COMPANY OF PROPRIETORS OF EAST LONDON WATERWORKS AND BASE.

THIS case recently came before Mr. Justice Buckley in the Chancery Division. It was an action by the West Ham Central Charity Board, being the Vicar, Churchwardens, and Overseers of the Poor of the parish of West Ham, against their lessees, the East London Waterworks Company and an undertenant, for an injunction to restrain the defendants from committing waste on land, the subject of the lease, by permitting rubbish, earth, or material to be brought and remain thereon. By a lease dated September 29, 1830, a parcel of meadow or marsh ground in the parish of West Ham was demised by the plaintiffs to the waterworks company, who were desirous of forming and establishing a reservoir, for a term of ninety-nine years at a rent (after the first six years) of 70*l.* The lease contained a covenant by the company to drain, fill-up, level, and make good all pits, holes, and excavations made by the company to the intent that the land should be restored to the plaintiffs on the determination of the lease in the same condition as it was granted to them, and a further covenant to so yield it up. The company never constructed a reservoir, but let the land for grazing purposes, and in 1896 they demised the premises for the remainder of the term less three days to one Base, who used it as a rubbish shoot and deposited on it vegetable and other refuse. The plaintiffs alleged that this use of the land was a damage to the reversion. On the other hand, evidence was adduced to show that the value of the land was materially increased.

Mr. Justice Buckley, after reviewing the authorities as to what constituted waste, said that the question he had to investigate was, what was the nature of the property demised and whether the nature of the property demised was altered by what had been done. His Lordship then reviewed the facts and the evidence at considerable length, and said that it was clear that the authority given by the waterworks company to the defendant Base was to level up the land, but that authority did not extend to allowing him to bring offensive material on the land. It appeared that large quantities of vegetable refuse had been brought upon it, but it was contended that

this would disappear in about three years. But if it did not disappear, the plaintiffs might find themselves at the termination of the lease precluded by Section 25 of the Public Health Acts Amendment Act, 1890, from building upon the land. Upon the evidence, his Lordship was not satisfied that the offensive matter would have disappeared at the end of the lease. It was admitted by both sides that the land would in the future be used for the erection of factories and not of houses. The defendant Base had raised the land 10 ft. above its original level. If this were left it would be necessary, in building factories or other heavy buildings, to dig through this 10 ft. down to the original land before a good foundation could be obtained. The question was whether this constituted an alteration of the property demised. The defendants contended that it was not, and that, although it would be necessary to dig down through the 10 ft., yet the extra cost incurred in so doing would be more than recouped by the additional value attaching to the raised land. His Lordship did not agree. In his opinion, the raising of the land constituted waste. The reversioners might wish to let the property for a rubbish shoot, but by the alteration of the level the inheritance would loose the benefit of doing so. Why should they not have the property restored to them in its original state? In his Lordship's opinion, there had been such an alteration of the level of the property as to constitute waste, and the plaintiffs were entitled against both the defendants to the injunction they asked.

A PLASTERER'S CLAIM UNDER THE WORKMEN'S COMPENSATION ACT.

THE case of Farmer *v.* Danville Asbestic Plastering Company came before the Court of Appeal composed of Lords Justices A. L. Smith, Collins, and Romer, on March 5, on the application of the Company for security for costs of an appeal under the Workmen's Compensation Act, 1897. It appeared that Farmer was a plasterer in the employ of the Company, and at the time of the accident was earning a wage of 1*l.* 11s. 6d. per week. Mr. Roskill, who appeared in support of the application, submitted that Farmer had no means of paying the costs if he proved unsuccessful on the appeal.

Counsel for the applicant said that the case was an exceptional one. It was submitted that the respondents to the claim were sub-contractors, but it turned out that their contract was direct with the building owner. The building in which the accident happened was a new building, and part of the work was plastering the interior. The judge of the City of London Court held that the respondents were not "undertakers" within the meaning of the Act; but, inasmuch as he was doubtful on the point, he suggested that an appeal should be brought, and stayed execution. The judge was Mr. Pitt Lewis, and he also decided that the employment of Farmer was not such to which the Act applied.

Lord Justice Smith: Was the building over 30 ft. high?

Mr. Roskill: Yes, my lord.

Lord Justice Smith: Constructed by scaffolding?

Mr. Roskill said that the scaffolding was erected by the builder and not by the plasterer at all.

Lord Justice Smith: The point is this. The County Court Judge says there ought to be an appeal, and the man has no means. Is it a case in which we should shut out the man from the right of appealing?

After further argument, Lord Justice Smith, in giving judgment, said the Court could not order security in the present case. The Court would not let a workman appeal if he had no means without security, unless he could show good reason why he ought to have leave to appeal. This he had done in the present case. The application would be refused, the costs of the application to be costs in the appeal.

The other Lords Justices concurred.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

23,159.—ARTIFICIAL STONE: *A. H., H., & G. van der Vlugh.*—Pumice stone, slag sand, tan either spent or unspent, plaster of Paris, and hydraulic lime are compounded together, as an improvement of the admixture specified in No. 25,880 of 1896.

23,160.—AUTOMATICAL SWITCHES (ELECTRICAL): *A. Schlatter.*—For switches that regulate the number of transformers according to the load; the switch arms are controlled by magnets which have two opposite windings; as the load becomes reduced and the current lessened the contact lever is forced down by a falling weight, thus a short circuit results; the magnet is demagnetised, and circuit is broken by the rising of a lever through the fall of the weight, the lever can be disposed so as to short circuit the one winding, instead of the two windings, upon the magnet.

23,168.—APPARATUS FOR FRENCH AND SIMILAR POLISHING: *C. W. Jones & H. Webb.*—Gearing is devised for turning a removable pad fitted with a reservoir for polish or oil, and fastened on to a spindle having ball bearings; the spindle is attached to a flexible shaft, which is secured to another shaft hanging upon a spring lever, and is driven by a belt pulley, through which it will move lengthwise without turning. A band from a pulley upon the main shaft drives a cone pulley, which drives the shaft upon the spring lever, and passes over three pairs of guide-pulleys whereof one pair is mounted upon a sliding and counterpoised bracket; thus the band will operate in any position of the machine's adjustable frame.

23,294.—WINDOW CASEMENTS: *J. W. Moseley.*—To the frame are pivotted ribbed angle-iron brackets which carry central vertical pivots upon which the casement is mounted, as the casement is swung backwards a stop engages with the bracket, and it is held in line with the bracket by means of a spring which carries a stud projecting through a hole in the bracket; the contrivance is described as being adapted for use with transom windows and fanlights, in which instance the links or brackets swing upon upper horizontal pivots and are pivotted to the sash stiles' centres, and for use with casements mounted in sliding sashes or frames.

23,316.—GAS IGNITION AND EXTINCTION: *C. F. Gaebert.*—The gas cock's plug—upon which are mounted the burner and the pilot jet's tube—has pilot and main channels which are joined respectively by grooves in the plug casing; a sleeve and a lever turn the casing round in such a manner that the gas will flow to either the pilot burner alone, or the main burner alone, or the two burners together.

23,317.—WRENCHES: *H. F Loos.*—The gripping jaws are pivotted to one another and to the casing, whilst a cone-shaped piece forces the ends apart and the jaws together against the pressure of a spring, the piece being attached to a screw, which is turned within a fixed nut by a thumb-piece that can turn freely in the casing, though its advance is retarded by means of a pin in an annular groove; there are various other modifications of the contrivance.

23,335.—STORAGE TANKS AND CISTERNS: *J. Downton.*—The tank is fashioned with a cone-shaped bottom, at whose lowest point is an outlet, intended to obviate the accumulation of sediment; in the closed top is an air-valve to be closed with a float when the tank is filled, otherwise the supply may be stopped with an ordinary ball-float and cock.

23,341.—CEILINGS: *A. Elle.*—The ceilings are built up with hollow blocks of gypsum or artificial stone, which interlock and are wedged together at their sides with divided key-blocks fixed with wedges, the ends of the blocks are locked with wedges, and are borne by laths nailed on to the beams, the spaces above the blocks can be filled with ashes or dry sand, and liquid gypsum is to be applied to their joints or bearing-faces.

23,370.—BURNERS FOR LIQUID FUEL: *C. Brünler.*—By this contrivance, which is more particularly applicable to the spraying of fuel upon heated surfaces, the fuel is mixed with a quantity of air, which is sufficient for producing incompleted combustion when it strikes the vaporiser, the introduction of more air through a separate air-pipe induces completed combustion at the burner's mouth, thus the vaporiser remains comparatively cool, and will last a longer time; for crucibles an air-pipe and a hollow vaporiser are provided, air passing through side slots to mingle with the fuel, and completed combustion ensues when more air is admitted at the burner's mouth.

23,386.—AN ALLOY FOR ALUMINIUM: *G. E. Bourgoin.*—For hardening and increasing the elasticity and strength of aluminium an alloy is made by fusing nickel, copper, cast steel, and aluminium in a crucible beneath a layer of pulverised vegetable charcoal and slate, which serves to reduce oxidation and to exclude air. An amalgam of tin and aluminium is then added, the compound is purified with ferrocyanide of potassium or some other cyanide, and is ready to be poured off. The alloy and aluminium are fused together.

23,420.—REFLECTORS FOR ELECTRICAL LAMPS: *Sir J. B. Maple & J. Verity.*—The principle of the invention lies in the holding of a solid or hollow reflector centrally within a filament without direct fusion to the bulk. By one method (out of the many which are specified) the reflector consists of a tube closed at one end and filled with phosphorescent material, dried by heat and then drawn out and sealed at the other end. By another method the reflector's upper end is cemented in an open glass tube of the bulb.

23,437.—SOLDERING AND BRAZING ALUMINIUM AND ITS ALLOYS: *G. E. Bourgoin.*—After the parts have been covered with a solution of ethyl alcohol, 95 parts (by weight), Venetian turpentine, 3 parts, and essence of lavender, 2 parts, they are heated to from 150 deg. to 300 deg. C., and soldered with a compound of tin, 80 to 90 parts, and an aluminium alloy, 10 parts to 20 parts, which contains 2 per cent. of the alloy specified in No. 23,386 above. For making the solder or brazing the aluminium alloy is melted in a non-silicious crucible and poured into the tin when in a fused condition.

23,508.—FIREPROOF CONSTRUCTION: *T. Potter.*—In one adaptation metallic lathing, metal bars, and slotted plates are used for suspending a plaster ceiling from wooden joists; for concrete floors and partitions the tensile stresses are taken by corrugated metal rods embedded in the concrete, and the flooring boards are fastened to the concrete with an admixture of glue, linseed oil, red lead, wood resin, and salicylic or boracic acid, instead of with nails. For theatres and similar places, concrete risers are cast above the metal joists, metal sheets are laid upon the risers and the flanges of the joists, concrete is laid upon the plates, and wooden seats upon the concrete. Wooden treads are let into grooves in steps and walls, being fastened with screws or nails driven into metal or wooden sockets in the concrete.

23,561.—PLATFORM FOR LOADING VANS, &C.: *W. T. Rounsivell.*—The platform, or portable lift, has an iron frame which runs upon wheels, and is raised or lowered upon screws at the corners which are turned by a bevel gearing and a crank; a chain passes round a sprocket-wheel upon each screw to couple them together.

23,573.—SPIGOT AND SOCKET JOINTS FOR PIPES: *R. Ewing.*—The pipes may be laid and cemented-up under water by means of fitting a rim inside the socket end into a small faucet upon the spigot end, which also has an outer flange for the mouth of the socket; the joint is made by filling clay or composition into the grooved flange and faucet, and then filling the joint with cement through a hole in the socket pipe; reference is made to the similar joints specified in No. 14,926 of 1893.

23,605.—LAMPS FOR TIP-CARTS AND OTHER VEHICLES: *T. Rogers.*—In order that the lamp shall always retain a vertical position, it is arranged to swing freely upon a supporting-tube at the cart's side by means of flexible straps or bands upon the edges of the lamp's head.

23,636.—STONE AND EMERY DRESSING TOOLS: *R. Rickie.*—A slide-rest, to be fed forwards with a screw and traversed with a lever, carries a steel roller which rotates upon a pin and has a surface which is broken up into points formed by the crossing of two sets of grooves at right angles to one another; the tool is described as being serviceable for turning or planing granite, &c., as well as for trueing-up emery and corundum wheels and grindstones.

MEETINGS.

FRIDAY, MARCH 9.

Architectural Association.—Mr. C. E. Bateman on "Small Houses." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. J. Wright Clarke on "Details of Plumbers' Work. 8 p.m.

Royal Institution.—Professor F. Clowes on "Bacteria and Sewage." 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Messrs. John Duncan, W. A. Wales, and G. J. Day on "The Distribution of Stress in the Walls of a Thick Cylinder." 8 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).—Mr. J. Fairweather on "Points in Practice." 8 p.m.

SATURDAY, MARCH 10.

Architectural Association.—Third Spring Visit, to the workshops of Messrs. Farmer & Brindley, 63, Westminster Bridge-road, S.E. 2.30 p.m.

Royal Institution.—Right Hon. Lord Rayleigh on "Polarised Light." II. 3 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at Beddington Sewage Farm. 3 p.m.

Institution of Junior Engineers—Conversazione at the Westminster Palace Hotel. Reception at 7 p.m. by the President, the Hon. Charles A. Parsons, F.R.S., and Mrs. Parsons, the Chairman, Mr. Basil H. Joy, and Miss Joy.

Dundee Institute of Architecture.—Visit to Mather's Hotel and surrounding buildings, and Park U.P. Church. 2 p.m.

Edinburgh Architectural Association.—Visit to Prestonpans.

MONDAY, MARCH 12.

Surveyors' Institution.—Mr. J. Shiress Will, Q.C., on "Underground Water." 8 p.m.

Society of Arts (Cantor Lectures.)—Mr. E. Sanger Shepherd on "Photography of Colour." II. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. W. C. Tyndale on "House Drainage." 8 p.m.

The Institution of Mechanical Engineers (Graduates Meeting).—Mr. Brees van Homan on "Steel Skeleton Construction as Applied to Buildings on the American System." 7.30 p.m.

Bristol Society of Architects.—Mr. Peter Addie, City Valuer, on "The Removal of Insanitary Areas and the Management of Improvement Schemes under the Housing of the Working Classes Act." 8 p.m.

TUESDAY, MARCH 13.

Institution of Civil Engineers.—Sir Charles Hartley on "A Short History of the Engineering Works of the Suez Canal." 8 p.m.

Society of Arts (Applied Art Section).—Mr. Lasenby Liberty on "English Furniture." 8 p.m.

Society of Biblical Archæology.—(1) Note by Professor Sayce (President). (2) Paper by Dr. James H. Breasted, on the "Annals of Thothmes III., and the Location of Megiddo, &c." 4.30 p.m.

Royal Victoria Hall, Waterloo-road.—Mr. G. A. J. White on "The Polarisation of Light." 8.30 p.m.

Sheffield Society of Architects and Surveyors.—Mr. C. M. Hadfield on "The Architecture of the Fifteenth Century and Early Tudor Period."

WEDNESDAY, MARCH 14.

Architects' Benevolent Society.—Annual General Meeting of the Subscribers and Donors will be held in the Rooms of the Royal Institute of British Architects. The President, Mr. William Emerson, will take the chair at 5 o'clock.

Society of Arts.—Mr. H. Macan, M.A., on "Continuation School Work in Rural Districts." 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection in the Parish of St.

George's, Hanover-square. (2) Professor H. Robinson on "Sewerage and Sewage Disposal." 8 p.m.

Sanitary Institute.—Professor Frank Clowes, D.Sc., on "Experimental Bacterial Treatment of the London Sewage." 8 p.m.

Institute of Sanitary Engineers (Incorporated).—Mr. Wm. Strachan on "The Construction of Water-tight Sewers and House Drains in Waterlogged Ground." 7 p.m.

Northern Architectural Association.—Annual Meeting. Sir Benjamin Chapman Browne, D.C.L., will present the prizes to the successful students during the evening. 7.30 p.m.

THURSDAY, MARCH 15.

Royal Institution.—Dr. Charles Waldstein on "Recent Excavations at the Argive Heræum (in Greece)"—III. 3 p.m.

FRIDAY, MARCH 16.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. Charles Jones on "Scavenging, Disposal of House Refuse." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Cathedral Works in progress at Ashley-place, Westminster. Assemble at the works at 2.30.

SATURDAY, MARCH 17.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

Royal Institution.—The Right Hon. Lord Rayleigh on "Polarised Light." III. 3 p.m.

People's Palace Architectural Society.—Mr. Tanner on History of Home Drainage." 7.30 p.m.

British Institute of Certified Carpenters.—Visit to the Catholic Cathedral, Westminster, by permission of his Eminence Cardinal Vaughan. Meeting at Archbishop's House, Carlisle-place, at 3.30 p.m.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

February 13.—By STEPHENSON & ALEXANDER (at Cardiff).

Cardiff, Glamorgan.—Penylan, "The Old Well" and 1 a., u.t. 84½ yrs., g.r. 22*l.* — £2,750

February 20.—By R. DALTON & SON (at Carlisle).

Botcherley, Cumberland.—A freehold house and 3 r. 8 p. — 1,000
Two freehold closes, 3 a. 3 r. 29 p. — 790
Freehold farmhouse and 44 a. 0 r. 1 p. — 3,400
Far and Near Piper Mire closes, 24 a. 2 r. 38 p., f. — 930
Several enclosures, 32 a. 3 r. 21 p., f. — 1,580
Carlisle.—37 and 39, Bank-st., f. — 1,250

By HEPPER & SONS (at Leeds).

Leeds.—Cromwell-st., the Mount Mills Estate, area 3,367 yds., f. — 3,300
47, Albion-st., area 245 yds., f., r. 80*l.* — 5,750
Butts Court, house, stabling, and a plot of land, area 403 yds., f., r. 42*l.* — 2,660

February 21.—By FOSTER & CRANFIELD.

Greenwich.—Clarence-st., &c., i.g. rents 144*l.* 5s., u.t. 24 and 23 yrs., g.r. 52*l.* — 1,130
Dulwich.—19, Ondine-rd., u.t. 75 yrs., g.r. 6*l.*, r. 28*l.* — 310
Hove, Sussex.—25, Carlisle-rd., f., e.r. 45*l.* — 750
Wealdstone, Middlesex.—11, Spencer-rd., f., r. 36*l.* — 550

By RUTLEY, SON, & VINE.

Holloway.—26, Ingleby-rd., u.t. 49 yrs., g.r. 6*l.*, r. 34*l.* — 350
Islington.—55 Rotherfield-st., u.t. 41 yrs., g.r. 9*l.*, r. 50 — 430
Camden Town.—15, Randolph-st., f., e.r. 50*l.* — 610

By DOUGLAS YOUNG & CO.

Stockwell.—46 and 48, Stockwell Park-crescent., f., r. 76*l.* — 1,050
Clapham.—51, Manor-st., f.r., 36*l.* — 500
Wandsworth.—6, Knoll-rd., u.t. 85 yrs., g.r. 7*l.*, e.r. 36*l.* — 300
Wimbledon.—8, Hartfield-rd., f., e.r. 60*l.* — 650

By W. G. SHADRAKE (at Stratford).

Ilford, Essex.—Oakfield-rd., "Kenilworth," f. — 420
East Ham.—183, Katherine-rd., f. — 275

By BATCHELAR & SON (at Horley).

Charlwood, Surrey.—"The Laurels" and 1 acre, f. — 590

February 22.—By J. HABGOOD & SON (at Witney).

Aston, &c., Oxon.—"Claywell Farm," 130 a. 2 r. 32 p., f. — 2,150

By DAVID BURNETT & CO. (at Carnarvon).

Carnarvon.—35, North-rd., u.t. 63 yrs., g.r. 8*l.* 18s. 3d., e.r. 70*l.* — 1,000

By TOOTELL & SONS (at Maidstone).

Maidstone, Kent.—120, Kingsley-rd., f. — 225
Tonbridge, Kent.—61, 63, and 65, Lavender Hill, f., r. 46*l.* 2s. — 810
Yalding, Kent.—Freehold House and shop, with four cottages adjoining — 520

By HENRY HENDRIKS (at Birmingham).

Edgbaston, Warwick.—77, Harborne-rd., u.t. 16 yrs, g.r. nil — 920
King's Heath, Worcester.—Ashfield Avenue, Metchley and Newlyn, u.t. 94 yrs., g.r. 16*l.* r. 90*l.* — 900
Handsworth, Staffordshire.—76 to 84 (even), Grove-lane, u.t. 97 yrs., g.r. 20*l.*, r. 117*l.* — 985
3, Waverhill-rd., u.t. 84 yrs., g.r. 4*l.* 10s., r. 18*l.* — 210

By CHESTERTON & SONS.

Hammersmith.—46, Brook Green, f., r. 75*l.* — 2,000
Kensington.—28, Campden House Court, u.t. 87 yrs., g.r., &c., 53*l.* — 4,400

By FAREBROTHER, ELLIS & CO.

Wandsworth.—78 to 88 (even), East Hill, u.t. 62½ yrs., g.r. 38*l.* 10s., r. 223*l.* — 2,465
Kensington.—120, Sinclair-rd., u.t. 79 yrs., g.r. 15*l.*, e.r. 85*l.* — 600
Hyde Pk.—12, Marble Arch, u.t. 22 yrs., g.r. 5*l.* 10s., e.r. 200*l.* — 1,900

By HOLCOMBE, BETTS, & WEST.

Marylebone.—Earl-st., i.g.r. 75*l.*, u.t. 15 yrs., g.r. nil — 600
Portman-sq.—5 and 6, Portman-mews South, u.t. 22 yrs., g.r. 11*l.* 14s., r. 110*l.* — 840

By C. C. & T. MOORE.

Leytonstone.—High-rd., a range of stabling, u.t. 26 yrs., g.r. nil, r. 100*l.* — 1,510

Dalston.—19, Lenthall-rd., u.t. 36½ yrs., g.r. 4*l.*, r. 37*l.* — £300
Shoreditch.—1, Holywell-row, f., r. 33*l.* — 450
Bow.—Armagh-rd., f.g.r. 9*l.*, reversion in 74 yrs. — 235
Plaistow.—83 to 95 (odd), Northern-rd., f. — 1,255
105 to 115, 129 to 135 (odd), Queen's-rd., u.t. 65½ yrs., g.r. 40*l.* — 1,200
Islington.—432, Essex-rd., u.t. 21 yrs., g.r. 11*l.*, r. 54*l.* — 405

By NEWBON, EDWARDS, & SHEPHARD.

Stoke Newington.—1, Newington Green-rd., u.t. 26 yrs, g.r. 6*l.* r. 40*l.* — 330
15, 21, and 23, Winston-rd., u.t. 60½ yrs., g.r. 19*l.* 10s., r. 123*l.* — 720

By STIMSON & SONS.

Crouch End.—15, Christchurch-rd., u.t. 75½ yrs., g.r. 10*l.* 10s., e.r. 75*l.* — 1,200
Peckham.—38, 40, and 42, Goldsmith-rd., and 4, Westerfield Gardens, u.t. 65 yrs., g.r. 10*l.* — 800
5 to 13, Westerfield-gardens, u.t. 65 yrs., g.r. 14*l.* — 1,450
Southwark.—9 to 13, 19 and 20, Ladds-court; also l.g.r. 15*l.*, u.t. 55½ yrs., g.r. 57*l.* — 600
Bermondsey.—89, Long-lane, f., r. 45*l.* — 800
Blackheath.—37, St. John's Park, u.t. 66½ yrs., g.r. 8*l.*, r. 50*l.* — 530
Brockley.—385, Brockley-rd., u.t. 91 yrs., g.r. 7*l.* 10s., r. 55*l.* — 850
Lewisham.—5, The Pavement, u.t. 92 yrs., g.r. 7*l.* 10s., r. 50*l.* — 530

By WILKINSON, SON, & WELCH (at Brighton).

Hove, Sussex.—29, Brunswick-ter., f. — 2,800

By G. A. MCDOWALL (at Stratford).

Canning Town.—8, Oak-cres., u.t. 84 yrs., g.r. 4*l.* 4s. — 250
Plaistow.—61 and 63, Kent-st., u.t. 80 yrs., g.r. 6*l.* 6s. — 245

February 23.—By DOLMAN & PEARCE.

Oxford-st.—19, Woodstock-st., area 1,260 ft., City leasehold, u.t. 34 yrs., renewal fine 21*l.*, e.r. 180*l.* — 2,325

By J. C. PLATT.

Walthamstow.—36, West Avenue-rd., u.t. 84½ yrs., g.r. 5*l.*, r. 30*l.* — 250

By A. J. SHEFFIELD.

Leytonstone.—Poppleton-rd., seven leasehold houses, u.t. 94 yrs., g.r. 50*l.* 1s. 6d., r. 257*l.* (in lots) — 2,755
Poplar.—6, Portree-st., u.t. 73 yrs., g.r. 4*l.* 5s. — 285

By THURGOOD & MARTIN.

Cranham, Essex.—Tabram's Farm, 15 a. 3 r. 32 p., f., r. 20*l.* — 750
Main-rd., an enclosure of land, 4 a. 0 r. 23 p., f., r. 5*l.* — 280
Camberwell.—83, Denmark Hill, u.t. 30 yrs., g.r. 5*l.*, e.r. 85*l.* — 410
St. Pancras.—105 to 111 (odd), and 111b, Euston-st., with stabling, &c., in rear, u.t. 14¾ yrs., g.r. 20*l.*, r. 140*l.* — 675
February 26.—By C. RAWLEY CROSS & CO.
South Kensington.—Glendower-pl., a freehold building site, area nearly 2,000 ft. — 3,350
Acton.—3, and 5, Heathfield-rd., u.t. 76 yrs., g.r. 18*l.*, r. 76*l.* — 755
Hammersmith.—75 to 81 (odd), Dalling-rd., u.t. 45½ yrs., g.r. 12*l.*, r. 128*l.* — 1,255
Ealing.—3, Sunnyside-rd., u.t. 83 yrs., g.r. 7*l.*, r. 35*l.* — 350

By SPENCER, SANTO, & CO.

Battersea.—36, Savona-pl., and 123, Battersea Park-rd. (site of) f. — 405
February 27.—By BRACKETT & SONS.
Cavendish-sq.—21, Queen Anne-st., u.t. 10¼ yrs., g.r. 50*l.*, r. 270*l.* — 1,300

By FIELD & SONS.

St. John's Wood.—38, Acacia-rd., u.t. 35 yrs., g.r. 9*l.*, e.r. 70*l.* — 620
Newington.—26 and 28, Tarn-st., and 11, 13, and 15, Tiverton-st., u.t. 10 and 11 yrs., g.r. 14*l.* 8s. — 355
Stepney.—19, Smith-st., u.t. 13½ yrs., g.r. 2*l.* 10s., e.r. 30*l.* — 205

By JENKINS & SONS.

Bermondsey.—26, 28, and 30, Drummond-rd., u.t. 34 yrs., g.r. 12*l.* — 855
Brockley.—6, Albert-rd., u.t. 65 yrs., g.r. 7*l.*, e.r. 50*l.* — 475

By F. JOLLY & CO.

Clapton.—112, Down's Park-rd., u.t. 42½ yrs., g.r. 8*l.* — 725

By W. W. READ & CO.

Chelsea.—3, Anderson-st., and 161, Keppel-st., u.t. 42½ yrs., g.r. 10*l.*, r. 72*l.* — 760
4, Anderson-st., u.t. 42¼ yrs., g.r. 10*l.*, r. 48*l.* — 660

By JOHNSON & BYFIELD.

Caledonian-rd.—39, 40, 41, and 42, Clayton-st., u.t. 44½ yrs., g.r. 40*l.* — 700

By ROGERS, CHAPMAN, & THOMAS.

Westminster.—18, Bessborough-st., u.t. 32 yrs., g.r. 10*l.*, r. 60*l.* — 480

By DEBENHAM, TEWSON, & CO.

Hornsey.—Hillfield-av., f.g.r. 52*l.* 10s., reversion in 98 yrs. — 1,420
Bowes Park.—Palmerston-rd., f.g.r. 67*l.* 4s., reversion in 95 yrs. — 1,855
Kilburn.—Callcott-rd., f.g.r. 51*l.* 12s., reversion in 86 yrs. — 1,620
Norwood.—Knightshill-rd., f.g.r. 42*l.*, reversion in 94¾ yrs. — 1,140
Tooting.—The Parade, f.g.r. 72*l.*, reversion in 96 yrs. — 2,300
Harlesden.—65, 67, 69, and 71, Burns-road, u.t. 92 yrs., g.r. 24*l.* — 1,080
Norwood.—150, Selhurst-rd., u.t. 993 yrs., g.r. 24*l.* — 750

By STEPHENSON & ALEXANDER (at Cardiff).

Cardiff, Glamorgan.—163, Cathedral-rd., u.t. 92½ yrs., g.r. 8*l.*, r. 45*l.* — 550

By R. CHEKE & CO. (at Stratford).

Manor Park.—134, Meanley-rd., u.t. 97 yrs., g.r. 5*l.* 5s., — 220
23, Berkeley-rd., f. — 265
Stanley-rd., two plots of building land, f. — 112

By GEORGE RAVENSHEAR (at Ealing).

Ealing.—96, 98, 100, and 102, Uxbridge-rd., area 11,300 ft., f. — 4,000
5, Churchfield-rd., u.t. 68 yrs., g.r. 7*l.* 7s. — 650

By DYER, SON, & HILTON (on the Premises).

Lee.—100, Eltham-rd., u.t. 64½ yrs., g.r. 15*l.*, e.r. 95*l.* — 800

February 28.—By J. G. DEAN & CO.

Balham.—27, Tunley-rd., u.t. 96 yrs., g.r. 10*l.*, e.r. 65*l.* — 675

17, Tunley-rd., u.t. 96 yrs., g.r. 6*l.* 10s., e.r. 38*l.* — £375

By J. & W. JOHNSON & CO.

Clapton.—50, 52, 54, and 56, Beecholme-rd., u.t. 70 yrs., g.r. 12*l.* 12s. — 900

By JONES, SON, & DAY.

Ratcliff.—62 and 64, White Horse-st., and 1 to 7 (odd), Green-st., u.t. 20 yrs., g.r. 20*l.*, r. 189*l.* 4s. — 1,300
Limehouse.—3, 5, and 7, Endive-st., u.t. 9 yrs., g.r. 9*l.*, r. 66*l.* — 210
Bromley-by-Bow.—21, Devons-rd., f., r. 30*l.* — 630
South Woodford.—9, Cleveland-rd., f., r. 50*l.* — 850
Spitalfields.—2, 3, and 4, Crispin-street, f., r. 204*l.* — 4,130
Whitechapel.—178, Whitechapel-road, f., r. 80*l.* — 1,850
Mile End.—58 and 60, Bedford-st., f., r. 66*l.* — 1,330
83a and 85a, Nelson-st., f. — 1,150
Limehouse.—25a and 25b, Three Colt-st., f., r. 76*l.* 8s. — 1,000
Greenwich.—20, London-st., f., r. 30*l.* — 550
Plaistow.—45 and 47, Hermit-rd., f. — 720
East Ham.—67, Arragon-rd., and a plot of land adjoining, f. — 370

By ERNEST OWERS.

Hampstead.—9, Sherriff-rd., f., e.r. 65*l.* — 1,160
7, Sumatra-rd., u.t. 87½ yrs., g.r. 5*l.* 10s., e.r. 36*l.* — 325
Thames Ditton, Surrey.—"The Crown Hotel" and three cottages adjoining, f., r. 55*l.* — 2,500

By ROBINS, GORE, & MERCER.

Oxford-street.—72, Newman-st., and 8, Berners-mews, u.t. 75¼ yrs., g.r. 25*l.*, r. 415*l.* — 5,000
Leyton.—1 to 11 (odd), Trelawn-rd., u.t. 77 yrs., g.r. 27*l.* — 1,480
Herne Hill.—113, Norwood-rd., u.s. 66 yrs., g.r. 6*l.*, r. 65*l.* — 750

By R. TIDEY & SON.

De Beauvoir Town.—29, Church-rd., u.t. 18¾ yrs., g.r. 8*l.* — 320
Ball's Pond.—20 and 21, Mildmay-st., f. — 825

By VENTOM, BULL, & COOPER.

Barking Creek, Essex.—Fisher-st., "Upper Wharf," f., e.r., 250*l.* — 1,900
Hart-st., Salisbury House, f. — 500

By DOUGLAS YOUNG & CO. (at Masons' Hall Tavern).

Walthamstow.—Woodford New-rd., "The Rising Sun," p.h., u.t. 14¾ yrs., r. 80*l.*, with goodwill — 6,800

By F. COOK & SON (at Driffield).

Driffield, Yorkshire.—Slayersdale farm, 179 a. 2 r. 20 p., f. — 5,500

By BALCH & BALCH (at Camden Town).

Camden Town.—1, Wilmot-pl., u.t. 23¾ yrs., g.r. 5*l.*, e.r. 48*l.* — 290
Kentish Town.—3, Crown-terrace, u.t. 47 yrs., g.r. 3*l.*, r. 28*l.* — 305
12, Grafton-ter., u.t. 46 yrs., g.r. 7*l.*, r. 36*l.* — 305
Haverstock Hill.—7, St. Thomas-gdns., u.t. 50 yrs., g.r. 6*l.*, r. 32*l.* — 350

By MARK HUBBARD (at Camden Town).

Kentish Town.—37, Patshull-rd., u.t. 61 yrs., g.r. 8*l.*, e.r. 55*l.* — 565

March 1.—By ELSWORTH & KNIGHTON.

Hyde Park.—61, Rutland-gate, u.t. 43½ yrs., g.r., &c., 48*l.* 15s., e.r. 350*l.* — 4,120

By F. J. BISLEY & SONS.

New Cross.—37 to 43 (odd), Wrigglesworth-st., u.t. 75½ yrs., g.r. 18*l.* — 1,260
Rotherhithe.—3 to 8, Reed-st., u.t. 50½ yrs, g.r. 13*l.* 10s. — 930

By DUNN, SOMAN, & COVERDALE.

Hampstead.—16, Dynham-rd., u.t. 82 yrs., g.r. 9*l.* 10s., e.r. 45*l.* — 400
Willesden.—41, 43, and 45, Lechmere-rd., u.t. 94 yrs., g.r. 19*l.* 10s., r. 92*l.* — 900

By CHARLES HALL.

East Grinstead, Sussex.—41, High-st., f., r. 30*l.* — 600
Dockhead.—No. 19, f., r. 45*l.* — 900

By NEWBON, EDWARDS, & SHEPHARD.

Victoria-pk.—109 and 110, Cadogan-ter., f., r. 52*l.* — 800
Caledonian-rd.—No. 86, u.t. 34½ yrs., g.r. 11*l.*, r. 60*l.* — 640
22 and 23, Carlsbad-st., u.t. 42 yrs., g.r. 12*l.*, r. 52*l.* — 365
15, Blundell-st., u.t. 47 yrs., g.r. 7*l.*, r. 35*l.* — 300
Holloway.—13, Stock Orchard-cres., u.t. 42 yrs., g.r. 9*l.*, e.r. 40*l.* — 285
93, Grove-rd., u.t. 63 yrs., g.r. 7*l.*, r. 40*l.* — 340
21 and 23, Marcellus-rd., u.t. 81 yrs., g.r. 10*l.* — 410
49 and 51, Marcellus-rd., u.t. 81 yrs., g.r. 10*l.* — 360
Barnsbury.—117, Richmond-rd., u.t. 9 yrs., g.r. 8*l.*, r. 48*l.* — 125
Canonbury.—70, Canonbury-rd, u.t. 18½ yrs., g.r. 6*l.* 10s., r. 32*l.* — 240

By STIMSON & SON.

Shepherd's Bush.—91 and 95, Uxbridge-rd., f., r. 130*l.* — 3,000
34, 36, and 38, Warbeck-rd., f., r. 114*l.* — 1,750
South Kensington.—15, Hogarth-rd., f., e.r. 90*l.* — 1,110
Brixton.—59, Rattray-rd., u.t. 72 yrs, g.r. 6*l.* 6s., r. 32*l.* — 330
67, 69, 71, and 73, Saltoun-rd., u.t. 73 yrs., g.r. 25*l.* 4s., r. 160*l.* — 1,565
Bermondsey.—37 and 39, Reverdy-rd., u.t. 39½ yrs., g.r. 9*l.* — 565
52 and 54, Reverdy-rd., u.t. 39¾ yrs., g.r. 9*l.* — 535
Lewisham.—26 and 28, Drysdale-rd., u.t. 53¼ yrs., g.r. 6*l.* — 405
Stockwell.—149 and 155, Landor-rd., u.t. 72 yrs., g.r. 13*l.* — 720

March 2.—By BAXTER, PAYNE, & LEPPER.

Beckenham, Kent.—9, Park-rd., u.t. 65 yrs., g.r. 20*l.* — 1,500

By H. CHAPMAN & CO.

Soho.—93, Dean-st., and 9, Diadem-court, f., r. 105*l.* — 2,500

By P. J. DIXON & CO.

Caledonian-rd.—34, Freeling-st., u.t. 44½ yrs., g.r. 6*l.*, r. 26*l.* — 230
Barnsbury.—81, Westbourne-rd. North, u.t. 59½ yrs., g.r. 8*l.*, r. 50*l.* — 460
58, Offord-rd., u.t. 49 yrs., g.r. 7*l.*, r. 46*l.* — 445
Finsbury-pk.—45, Lennox-rd., u.t. 63 yrs., g.r. 7*l.*, r. 48*l.* — 430
Bethnal Green.—15 and 17, Royston-st., u.t. 24 yrs. g.r. 6*l.* — 335

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Public Library, Reading Room, &c.	I. of Wight C.C. Tech. Ed. Com.	50*l.* and 50*l.*	April 30
*Schools	Governors, Bury Grammar Schools	100*l.*; 60*l.*; 30*l.*	June 1
*Plans for Laying-out Building Estate	.....	10*l.* and 5*l.*	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Works and Materials	Saint Giles Board of Works	Engineer, Board of Works Offices, 197, High Holborn, W.C.	Mar. 13
Paving Works near Grimsby	Cleethorpes U.D.C.	E. Rushton, Civil Engineer, Poplar-road, Cleethorpes	do.
Sewer	Hythe (Kent) Corporation	A. S. Butterworth, Civil Engineer, Hythe	do.
Paving Works, Pendleton	Salford Corporation	Borough Engineer, Town Hall	do.
Tramway Depot, Portswood	Southampton Corporation	Borough Surveyor, Municipal Buildings	do.
Sewer, Alexandra-place	Dover Town Council	H. E. Stilgoe, Civil Engineer, Town Hall	do.
Gravel, Flints, &c.	Chertsey U.D.C.	J. F. Stow, Engineer, Public Offices, Chertsey	do.
Storehouse, Tanks, &c., Waterloo, Ashton-under-Lyne	Limehurst R.D.C.	Foster, Son, & Bardsley, Engineers, 23, John Dalton-st. Manchester	Mar. 14
Coaling Stage and Incline, Tyne Dock, Newcastle	North-Eastern Railway Company	W. Bell, Architect, Central Station, Newcastle-on-Tyne	do.
Additions to Central Station Hotel, Newcastle-on-Tyne	do.	do.	do.
Street Works, Enfield-terrace	Birkenhead Corporation	C. Brownridge, Civil Engineer, Town Hall	do.
Drainage Works, &c.	Messrs. Watney, Coombe, & Co.	W. Fairley, Civil Engineer, 53, Victoria-street, E.C.	do.
Road Materials	Hoo (Kent) R.D.C.	Mr. Thurston, Surveyor, Hoo	do.
*Stable & Ambulance Shed, World's End, Winchmore Hill	Enfield U.D.C.	Surveyor, Court House, Enfield	do.
*Cleaning and Painting	Midland Railway Company	See Advertisement	Mar. 15
Road Materials	Houghton-le-Spring R.D.C.	D. Balfour, Civil Engineer, Houghton-le-Spring	do.
Walling (several miles)	Sheffield Corporation	W. Terry, Town Hall	do.
Workhouse near Bristol	Barton Regis Guardians	Thorp & Cotterell, Architects, 28, Baldwin-street, Bristol	do.
Road Materials	Flaxton (Yorks.) R.D.C.	J. Peters, 4, New-street, York	do.
Electricity Works, &c., Black-lane	West Bromwich Corporation	A. D. Greatorex, Civil Engineer, Town Hall	do.
Cemetery Extensions, &c.	Seaham Harbour U.D.C.	D. Balfour & Son, C.E., 3, St. Nicholas-bldgs., Newcastle-on-Tyne	do.
Road Works	Bradfield (Berks.) R.D.C.	J. Forrester, Surveyor, Theale, near Reading	Mar. 16
Sewers, &c., Yelverton	Tavistock District Council	G. D. Bellamy, Civil Engineer, 6A, Courtenay-street, Plymouth	do.
Sewers, &c., Earlston	Berwickshire County Council	Thomson & Wright, Civil Engineers, 22, Rutland-sq., Edinburgh	Mar. 17
Granite, &c.	Thorne R.D.C.	G. Kenyon, Plantation-road, Thorne	do.
Boilers, &c.	Birmingham Corporation	J. Cox, Engineer, Kent-street, Birmingham	do.
Sewerage Works, Wilstone	Tring R.D.C.	B. Asquith, Civil Engineer, Park-road, Tring	do.
Bricks, Cement, &c.	Warrington Corporation	J. Deas, Civil Engineer, Municipal Offices	do.
Surveyor's Materials	York Corporation	A. Creer, Civil Engineer, Guildhall, York	do.
*Repairs, &c., at Offices, &c., Thornton Heath	Croydon Guardians	F. West, Surveyor, 23, Coome-road, Croydon	Mar. 19
*Making-up Roads	Hornsey U.D.C.	Engineer, Council's Offices, Southwood-lane, Highgate, N.	do.
Railway, Dairy and North Johnstone	Glasgow & S.W. Railway Company	F. H. Gillies, St. Enoch Station, Glasgow	do.
*Steam Cooking, &c.	Taunton Guardians	Board Room, Union Office, Taunton	Mar. 20
Street Works	Bury (Lancs.) Corporation	A. W. Bradley, Borough Surveyor, Bank-street	do.
134 Houses, &c., South Kirkby, Yorks.	.....	Garside & Pennington, Architects, Pontefract	do.
Railway Station, Stourbridge Junction	Great Western Railway Company	G. K. Mills, Paddington Station, W.	do.
*Making-up Roads	Lewisham Board of Works	Surveyor's Department, Town Hall, Catford	do.
*Works and Materials	do.	Offices, Town Hall, Catford	do.
*Earthenware Sewer Pipes	Belfast Corporation	City Surveyor, Belfast	do.
*Business Premises, Parish-lane, Penge	Penge & Beckenham Co-op. Soc. Ltd.	F. E. L. Harris, Architect, 1, Balloon-street, Manchester	Mar. 22
Electric Lighting Works, Rainhill, Lancs.	.....	T. L. Miller, Civil Engineer, 7, Tower-bldgs., Water-st., Liverpool	do.
Gas Purifiers, &c.	Cowes (I.W.) Corporation	W. Halliday, 40, High-street, Cowes	do.
Surveyor's Materials	Burnley Corporation	Borough Surveyor, Town Hall	Mar. 24
*Fire Brigade Station	Bradford Corporation	Mawson & Hudson, Architects, Exchange, Bradford	do.
Sewerage Works, Oxted	Godstone R.D.C.	T. A. Barralet, Surveyor, Council Offices, New Oxted	Mar. 26
*Workhouse Infirmary, Retford	East Retford Guardians	Eyne & Southall, Architects, Chapelgate, Retford	do.
Steel Girder Bridge, Stockley Ford	Chesterfield R.D.C.	H. Silcock, Engineer, 14, Westgate, Mansfield	Mar. 27
*Outfall Sewer, Minster	Isle of Thanet R.D.C.	Bailey, Denton, Son, & Lawford, Engr., Palace Chmbrs., Westminster	Mar. 28
Road Making	Strood (Kent) R.D.C.	G. W. Prall, Workhouse, Strood	do.
*Sanitary Works & Alterations, Infirmary, Marloes-rd.	Kensington Guardians	Guardians' Offices, Marloes-road, Kensington, W.	Mar. 29
Outfall Sewer, Burn-rd.	West Hartlepool Corporation	J. W. Brown, Borough Engineer, Town Hall	Mar. 30
*Addition, &c., to Entrance Lodge, St. Pancras Cemetery	St. Pancras Vestry	Superintendent, St. Pancras Cemetery, East Finchley, N.	April 2
*Broken Granite	Middlesex County Council	County Engineer, The Guildhall, Westminster, S.W.	April 3
*Cartage of Granite and Gravel	do.	do.	do.
*Schools, Bowes-road, N.	Edmonton School Board	H. W. Dobb, Architect, 54, London-wall, E.C.	do.
*Home for Children	Paddington Guardians	J. Wallis Chapman, Architect, 18, Sutherland-av., Harrow-rd., W.	April 10
*Block of Flats, Kennington-road	Lambeth Walcot Charity Trustees	Waring & Nicholson, Architects, 38, Parliament-street, S.W.	No date
*Additions & Alterations to Holme Court Indus. School	Managers	Clerk, Union Offices, Isleworth, W.	do.
*Baptist Church and Schools, Newcastle-on-Tyne	.....	G. Baines & Son, Architects, 5, Clement's-inn, W.C.	do.
Road Works, &c.	Wallingford Guardians	C. Smith & Son, Architects, 164, Friar-street, Reading	do.
Residence, Shottery	.....	G. H. Hinton, Architect, 11, Church-street, Stratford-on-Avon	do.
Road Works, Ilkley	.....	Empsall & Clarkson, Architects, 7, Exchange, Bradford	do.
Additions to Premises, Lombard-street, Waterford	.....	R. H. Kelly, 21, The Mall, Waterford	do.
Warehouse, New Market-street, Wigan	O. & G. Rushton, Limited	Johnson & Son, Architects, 31, King-street, Wigan	do.
Residences, &c., Woldingham, Surrey	.....	C. F. Rutley & Co., Architects, 11, Dowgate-hill, E.C.	do.
Store Buildings, Royle-road, Burnley	.....	Borough Surveyor, Town Hall, Burnley	do.
Additions to Institute, Fisher-street, Carlisle	.....	Johnstone Brothers, Architects, 39, Lowther-street, Carlisle	do.
Storage Tank, near Buxton	Fairfield U.D.C.	C. Flint, Council Offices, Fairfield, Buxton	do.
Well Sinking	Grimsby Cordage Co., Ltd.	G. W. Atkinson, Architect, 1, Mark-lane, Leeds	do.
Sinking Two Shafts	Digby (Notts.) Colliery Co., Ltd.	S. A. Everett, Gedling, Notts.	do.
Well Sinking, near Doncaster	Hatfield Parish Council	T. Cooper, Junior, Council Offices, Hatfield, Doncaster	do.
Additions to Temperance Hotel, Fisherton-st. Salisbury	.....	F. Bath, Architect, Crown Chambers, Salisbury	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Architectural Assistant	Plumstead Vestry	3*l.* 3*s.* per week	Mar. 19
*Clerk of Works	Hendon School Board	.....	Mar. 20
*Engineer and Chief Surveyor	Tottenham U.D.C.	600*l.* per annum	do.
*Clerk of Works	Whiston R.D.C.	3*l.* 3*s.* per week	Mar. 21
*Architectural Assistants (two)	City of Sheffield	120*l.*	do.
*Clerk of Works	Soyland U.D.C.	.....	No date

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xix. *Public Appointments, pp.* xvi. & xix.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£	s.	d.	£	s.	d.
White Sea: first yellow deals	17	10	0	23	0	0
Second do.	16	0	0	17	10	0
Third do.	13	0	0	14	10	0
Battens, 40s., 30s., and 15s. less respectively.						
Petersburg: first yellow deals	15	0	0	17	10	0
Second do.	12	10	0	13	10	0
Battens, 30s. and 20s. less respectively.						
Petersburg, white deals	12	0	0	14	10	0
Do. white battens	9	10	0	11	0	0
Riga, white deals	10	0	0	11	0	0
Swedish mixed yellow deals	16	0	0	21	0	0
Third do.	14	0	0	17	0	0
Fourth do.	12	10	0	13	10	0
Fifth do.	11	10	0	12	10	0
Battens, 30s., 20s., and 10s. less respectively.						
Whitewood, 10 to 20 per cent. less.						
Finnish unsorted yellow deals	11	0	0	11	10	0
Battens, 10s. and 5s. less respectively.						
Whitewood, 5 to 10 per cent. less.						
Norwegian second yellow battens	8	0	0	8	10	0
Third do.	7	15	0	8	0	0
Fourth do.	7	10	0	7	15	0
Whitewood, 10s. less.						
Dantzig, Crown Deck deals, per 40 ft. 3 in.	0	15	0	1	5	0
Brack	0	12	0	1	0	0
St. Lawrence Pine deals, &c., per P.S.H.:—						
1st, Bright and Dry, regular sizes	21	0	0	28	0	0
" " oddments	14	0	0	22	0	0
2nd " regular sizes	16	0	0	18	10	0
" " oddments	11	0	0	15	0	0
3rd " regular sizes	10	0	0	11	0	0
" " oddments	8	10	0	9	10	0
4th " regular sizes	9	0	0	10	0	0
" " oddments	8	0	0	9	0	0
St. Lawrence Spruce deals, &c.						
First, regular sizes	10	10	0	13	0	0
Second "	9	15	0	10	5	0
Third "	9	10	0	9	15	0
Fourth "	9	0	0	9	10	0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.						
New Brunswick Spruce deals, &c.	9	10	0	10	10	0
Oddments, battens, and fourths	9	0	0	9	10	0
United States pitch pine planks and boards	11	0	0	15	10	0
Prepared Boards, per square						
1½ by 6½ and 7 in. 1st yellow	11	0		16	0	
" " 2nd "	10	6		13	0	
1 by 6½ and 7 in. 1st "	10	0		12	0	
" " " white	9	0		10	0	
" " 2nd yellow	9	0		11	0	
" " " white	8	0		9	0	
¾ by 6½ & 7 in. 1st & 2nd yellow	7	9		9	6	
" " " white	7	6		8	6	
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)	8	6		9	6	
¾ by 6½ and 7 in. 2nd yellow and white (ditto)	7	6		8	6	
¾ by 6½ and 7 in. 1st yellow and white (ditto)	6	6		7	6	
¾ by 6½ and 7 in. 2nd yellow and white (ditto)	6	0		7	0	
Narrower widths at 10 per cent. less. 3rd quality at 15 per cent. less than 2nd.						
Dantzig and Memel Fir Timber— per load						
Best middling	3	15	0	4	0	0
Good middling and Second	3	5	0	3	10	0
Common middling	3	0	0	3	5	0
Undersized	3	0	0	3	5	0
Swedish and Norwegian Balks	2	10	0	2	15	0
Baltic Oak Timber—						
Dantzig and Stettin—Large	3	15	0	4	15	0
Small	3	0	0	3	15	0
Quebec Timber per load						
Yellow Pine	5	0	0	6	10	0
Oak	4	15	0	6	15	0
Elm	4	5	0	4	10	0
Ash	3	10	0	4	5	0
Birch	3	7	6	5	15	0
New Brunswick, &c., Birch	3	5	0	4	0	0
American Pitch Pine Timber	3	17	6	4	10	0
Wainscot, per log, 18 cubic ft.—						
Crown (Eng. & Dutch) nominal	3	10	0	4	12	6
Brack nominal	2	15	0	3	15	0
Lathwood, per cubic fathom—						
Petersburg	4	0	0	6	10	0
Riga and Dantzig	4	10	0	5	10	0
Norway Poles, per ft. run	0	0	1	0	0	2½
Oak Staves, per mille full size pipe						
Memel, Crown	220	0	0	230	0	0
Brack	190	0	0	200	0	0
Dantzig	165	0	0	175	0	0
Bosnia, single Barrel (nominal)	28	0	0	30	0	0
United States, Pipe	37	10	0	45	0	0
Hogshead, extra heavy and double extra	32	0	0	35	0	0
Indian Teake per load	11	10	0	16	10	0
British Guiana Greenheart	0	0	0	8	0	0
Mahogany, per foot superficial—						
Honduras, cargo average	0	0	4½	0	0	5½
Nicaragua, do.	0	0	4½	0	0	5½
Tabasco, do.	0	0	4½	0	0	5½
Mexican, do.	0	0	4½	0	0	6
Panama, do.	0	0	4	0	0	4½
African, do.	0	0	3½	0	0	4
Cuba, do.	0	0	5	0	0	5
St. Domingo, do.	0	0	6	0	0	8
Do. Curls (good to prime)	0	0	5	0	0	7½
Walnut, American (logs)	0	0	9	0	1	3
Do. do. (planks and boards)	0	3	0	0	5	0
Italian, per foot superficial	0	2	0	0	7	6
Black Sea, per ton	6	0	0	12	0	0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT (*Continued*).

	£	s.	d.	£	s.	d.
Satin Walnut (logs) per foot cube	0	1	0	0	1	6
" (planks and boards)	0	1	9	0	3	0
Sequoia (Californian redwood), per foot cube	0	1	9	0	2	0
Whitewood, American (logs)	0	1	4	0	1	9
" " (planks and boards)	0	1	9	0	2	9
Quartered oak " " "	0	2	3	0	4	0
Kauri pine (logs)	0	1	9	0	2	0
" " (planks)	0	2	3	0	2	9
Jarrah (planks)	0	2	0	0	2	3
Lancewood spars each, fresh and large	0	5	0	0	7	0
Lancewood spars, ordinary to fair	0	3	0	0	4	0
Degame spars	0	8	0	0	10	0

METALS.

IRON—Pig, in Scotland ton	3	9	3	0	0	0
Bar, Welsh, in London	9	0	0	9	15	0
Do. do. at works in Wales	8	10	0	9	0	0
Do. Staffordshire, in London	9	15	0	11	15	0
COPPER—British cake and ingot	82	0	0	82	10	0
Best selected	82	10	0	83	12	0
Sheets, strong	86	0	0	87	0	0
Chili bars	79	15	0	0	0	0
YELLOW METAL lb.	6¾d.				7d.	
LEAD—Pig						
Spanish ton	16	15	0	0	0	0
English Com. Brands	16	17	6	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards	18	7	6	0	0	0
Pipe	18	17	6	0	0	0
ZINC—English sheet ton	27	0	0	0	0	0
Vieille Montagne	28	10	0	0	0	0
Spelter	22	0	0	22	5	0
TIN—Straits	150	0	0	0	0	0
Australian	150	0	0	150	10	0
English Ingots	154	0	0	155	0	0
Banca	0	0	0	0	0	0
Billiton	0	0	0	0	0	0

OILS, &c.

Raw Linseed Oil in pipes, per ton	26	10	0	0	0	0
" " " in drums, per gal.	0	2	4	0	0	0
Boiled " " in pipes, per ton	28	10	0	0	0	0
" " " in drums, per gal.	0	2	6	0	0	0
TAR—Stockholm barrel	1	6	6	0	0	0
Archangel	1	0	0	0	0	0
Turpentine, in barrels, per cwt.	2	2	0	0	0	0
" in drums, per gal.	0	3	4	0	0	0
Genuine Ground English White Lead	25	10	0	0	0	0
Red Lead	22	0	0	0	0	0
Best Linseed Oil Putty, per cwt.	0	8	0	0	0	0

BRICKS, &c.

	s.	d.	
Hard Stocks	31	0	per thousand alongside, in river.
Rough Stocks and Grizzles	29	0	" " " "
Smooth Bright Facing Stocks	58	0	" " " "
Shippers	42	0	" " " "
Flettons	29	6	" " at railway depôt.
Red Wire Cuts	34	0	" " " "
Best Fareham Red	71	6	" " " "
Best Blue Pressed Staffordshire	86	0	" " " "
Best Stourbridge Fire Bricks	84	0	" " " "
Best White Glazed Stretchers	260	0	" " " "
Headers	240	0	" " " "
Quoins and Bull-nose	340	0	" " " "
Double Headers	320	0	" " " "
Best Dipped Salt Glazed Stretchers and Headers	240	0	" " " "
Quoins and Bull-nose	280	0	" " " "
Double Headers	280	0	per thousand at railway depôt.
Seconds Quality White and Dipped Salt Glazed	40	0	per thousand less than best.

	s.	d.	
Thames and Pit Sand	7	0	per yard, delivered.
Thames Ballast	6	6	" "
Best Portland Cement	34	0	per ton "
Best Ground Blue Lias Lime	23	0	" "

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. od. per yard, delivered.

Stourbridge Fire-clay in sacks, 31s. 6d. per ton at rly, dpt.

STONE.

		s.	d.		
Ancaster in blocks		2	0	per ft. cube, deld. rly. depôt.	
Bath	"	1	7	"	"
Beer	"	1	6½	"	"
Grinshill	"	1	10	"	"
Brown Portland in blocks		2	2	"	"
Darley Dale	"	2	1½	"	"
Red Corsehill	"	2	5	"	"
Red Mansfield	"	2	4½	"	"
Hard York	"	2	10	"	"
" "	6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	7	per ft. super. at rly. depôt.	
" "	6 in. Rubbed Ditto	2	10½	"	"
" "	3 in. sawn both sides slabs (random sizes)	1	3	"	"
" "	3 in. self-faced Ditto	0	9	"	"

SLATES.

in.	in.	£	s.	d.		
20×10	best blue Bangor	11	5	0	per 1000 of 1200 at ry. dep.	
"	best seconds	10	15	0	"	"
16× 8	best	6	2	6	"	"
20×10	best blue Portmadoc	10	18	0	"	"
16× 8	" "	6	0	0	"	"
20×10	best Eureka unfading green	11	2	6	"	"
16× 8	" "	6	15	0	"	"
20×10	Permanent green and Sedan green	10	0	0	"	"
16× 8	" "	5	12	6	"	"

PRICES CURRENT (*Continued*).

TILES.

	s.	d.			
Best plain red roofing tiles	40	6	per 1,000 at rly. depôt.		
Hip and valley tiles	3	6	per doz.	"	"
Best Broseley tiles	47	6	per 1,000	"	"
Hip and valley tiles	4	0	per doz.	"	"

TO CORRESPONDENTS.

J. W. S., J. B., S. S. P. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERYSTWYTH.—For the erection of two villas, Llanbadarn-road, for Mr. T. Owen. Mr. J. Arthur Jones, architect, 7, Queen's-terrace, Aberystwyth:—

David Williams	£2,400	Edwards	£1,830
Lewis Bearne	2,196	Owen Bros.	1,797
E. E. Jenkins	2,150	Evans, Aberystwyth‡	1,753

‡ Accepted on amended specification.

BRADFORD.—For alterations, &c., to three dwelling-houses, Park-road, for the Guardians. Mr. Fred. Holland, engineer, 11, Parkinson's-chambers, Hustler-gate, Bradford:—

Masonry, Joinery, Plumbing, and Plastering.

John Copley, Lower Cobden-street, Long-side-lane, Bradford ..... £206 10s.

[Painters work not yet let.]

BURY (Lancs.).—For the execution of sewerage works, Blackford Bridge and Hampton Mills, for the Corporation. Mr. A. W. Bradley, C.E., Corporation Offices Bank-street, Bury:—

John Moore	£4,280 11 4	Underwood & Brother	£2,894 8 8
Smith & Boocock	3,680 4 7	Ainscouth & Son	2,847 8 2
T. & J. Foster	3,520 7 10	E. Tempest, 74A, Lancaster-avenue, Manchester*	2,835 1 10
T. Turner	3,458 19 10		
Freeman & Son	2,955 9 10		
Fotherby & Son	2,847 17 10		

DARTFORD (Kent).—For the construction of main sewerage for building estate on Stoneham Farm, Dartford-road. Mr. C. Evans-Vaughan, architect:—

Geo. Bell	£1,040	Thos. Adams (Wood Green)*	£999

DROGHEDA (Ireland).—For the erection of six dwelling houses at Stockwell-lane, for Mr. John Leland. Mr. Fred. Shaw, architect, Laurence-street, Drogheda:—

S. F. Roche	£1,687	B. Collins	£1,120
Smullen & Son	1,393	P. McCann, Laurence-street, Drogheda*	1,115
B. McDonnell	1,340		
F. Gogarty	1,200		

HARROW-ON-THE-HILL.—For the erection of shop for Mr. H. Sladden. Messrs. Cowell & Shaw, architects, 49, Finsbury-pavement, E.C.:—

A. Webb (Roxeth Hill)* £540

IPSWICH.—For the erection of a warehouse and alterations to premises on Felixstowe-road, for Mr. George Mence Smith. Mr. J. W. Start, architect, Colchester, Harwich, and 54, New Broad-street, E.C.:—

Pearce	£744 0	Kenney	£554 10
Death	584 0	Sadler	459 0
Grimwood & Sons	573 0	Bennett, Ipswich*	503 0
Chambers	584 0		

LONDON.—For the making of first portion of Colsterworth-road, Tottenham-green, for Mr. W. Hawley. Mr. Augustine C. Green, architect and surveyor:—

Thomas Adams	£1,998	C. T. Catley	£1,700
Grounds & Newton	1,899	George Bell*	1,692

LONDON.—For the erection of five houses and shops in Philip-lane, Tottenham, for Mr. D. Burnett. Mr. Augustine C. Green, architect:—

William Hawley, Tottenham* ..... £1,850.

LONDON.—For the erection of six villas on Mount Pleasant Estate, Tottenham. Mr. Augustine C. Green, architect:—

William Hawley, Tottenham* ..... £1,740.

[*See also next page.*

LONDON.—For finishing three houses in Burnaby Gardens, Chiswick, W., on the Sutton Court Lodge Estate. Mr. Edward Monson, architect, 22, Buckingham-street, Adelphi, W.C., and Acton Vale, W. :—

G. W. Bollom	£1,720	W. Blackburn	£1,185
Ferris Bros.	1,640	J. W. Bryant, Chiswick*	1,084
R. Nichols	1,300		

LONDON.—For the internal completion and decoration of Clerkenwell Town Hall. Mr. C. Evans-Vaughan, architect :—

Hampton & Sons	£2,700 0	Waring & Sons	£1,804 10
Dearing & Co.	2,565 0	De Jong & Co.	1,795 10
Bartlett & Co.	2,150 0	Campbell, Smith, & Co.*	1,717 0
Small & Sons	1,979 0		
Simpson & Sons	1,920 0		

NEWCASTLE-ON-TYNE.—For house and shop at Chopwell, near Newcastle-on-Tyne, for Mr. Robinson. Messrs. Plummer & Burrell, architects, 13, Grey-street, Newcastle, and at Durham :—

Harlow, Newcastle (lowest)* £596 19 2

WIMBLEDON.—For shop front and shop fittings, No. 4, Imperial-parade, Wimbledon, for Messrs. Peter Lawson & Son. Mr. Wm. Thomas, surveyor, 12, Waldemar-avenue, Fulham, S.W. :—

Cadman & Sons	£302	H. Johnson	£189
Sumner & Co.	271	S. Knight	178
Jones Bros.	227		

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following list of tenders. Mr. T. J. Bailey is the Board's Architect :—

CANAL-ROAD.—Improvements. Boys' and girls' departments. Providing new halls, giving an area of about 1,144 ft. for each department. Providing new class-room for each department accommodating 48; also two new staircases, teachers' rooms, stock-rooms, cloak-rooms, and lavatories, removing existing staircases, cloak-rooms, and lavatories, reducing length of two end class-rooms, re-dividing, re-stepping, and re-lighting existing centre class-rooms; providing drawing class-room, over hall, 44 ft. by 18 ft.; also furnace-room and coal cellar in basement. Infants' department.—Providing new hall, giving an area of about 1,144 ft., new teachers' room, stock-room, cloak-room, lavatory; entrances; one new babies' room, accommodating 50; re-dividing, re-stepping, and re-lighting centre class-rooms; removing cloak-room lavatory, and reducing two end class-rooms, and revising existing drainage system; heating apparatus (low-pressure hot water, and partly open fires). The new rooms and rooms altered are calculated on the seat basis. The new babies' room is calculated at 10 square feet per child. Revised accommodation—boys, 320; girls, 320; infants, 322; total, 962. Loss—boys, 38; girls, 33; infants, 112; total, 183 :—

Treasure & Son	£15,013	F. & F. J. Wood	£14,260
Miskin & Sons	14,979	Stimpson & Co.	14,180
Gregar & Son	14,835	Lawrance & Sons	14,079
Johnson & Co., Ltd.	14,559	C. Cox	13,900
Chessum & Sons	14,536	Williams & Son*	13,537
Grover & Son	14,510	Leslie & Co., Ltd.	12,176

GLAUCUS-STREET.—Removing two iron buildings and appurtenances from this site, and re-erecting them—one building upon the All Hallows site and the other upon the Vallance-road site, including a new connecting corridor in the latter case :—

Humphreys, Limited	£973	Mitson & Co.	£887
T. Cruwys	970	Croggon & Co., Ltd.	845
W. Harbrow	920	J. & W. T. Hunter*	795

GIPSY-ROAD (Improvements).—Providing and fixing complete low-pressure hot-water apparatus to two halls (B and G), three class-rooms (I and B), and cloak-rooms, corridors and lavatories (B, G, and I) :—

Stevens & Sons	£550	E. Oldroyd & Co., Ltd.	£435
J. Grundy	517	J. Defries & Sons, Ltd.	428
J. & F. May	495	G. & E. Bradley*	400
C. Kite & Co.	475		

Supply of LINOLEUM, on a running contract :—

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Wallace & Co.	2 7
Maple & Co.	2 6
Shoolbred & Co.*	2 5½

PLANTING TREES, SHRUBS, &c., at the following Schools :—

Schools.	R. Neal.	W. Cutbush & Son	A. Stearn.	A. Durrant
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Royal-hill	6 13 0	5 11 0	—	—
Virginia-road	1 5 0	3 3 6	—	—
Mansford-st.	1 19 6	2 15 0	—	—
Vallance-road	1 0 0	1 0 0	—	—
Portman-place	2 0 0	3 0 0	—	—
Totals	*12 17 6	15 9 6	15 17 6	19 0 0

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